The Effect of Holland’s RIASEC Interest Inventory on the Vocational Identity Development of Japanese High School Students

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This dissertation titled
The Effect of Holland’s RIASEC Interest Inventory on the Vocational Identity
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ABSTRACT

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The Effect of Holland’s RIASEC Interest Inventory on the Vocational Identity Development of Japanese High School Students (230 pp.)

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The purpose of this study was to investigate the effectiveness of providing Holland’s (1997) RIASEC interest inventory as a tool for Japanese high school students to narrow down their career choices and develop their vocational identity. It especially focused on how students reacted differently depending on their sex differences and job-seeking attitudes (occupational model or workplace/company model). Holland’s theory assumes that an individual chooses his or her desired occupation (occupational model), however, traditional Japanese job-seekers place more importance on choosing a desired workplace or a company (workplace/company model) and become generalists rather than choosing a single occupation. In such a culture, the effectiveness of Holland’s career intervention needed to be carefully investigated before its application to the target culture.

A sample of 58 Japanese high school students temporarily residing in the U.S. participated in an experimental design on their development of vocational identity after receiving an intervention. Data were analyzed using a factorial Analysis of Covariance (ANCOVA). A McNemar chi-square significance of change was also used to analyze the impact of Holland’s career intervention on students’ attitudinal change in their job-seeking orientation. While these analyses did not reveal any statistically significant
effects or differences, which may be due to the small sample and effect size, supplemental analyses revealed: (a) a statistically significant correlation between gain scores of vocational identity and a high level of Investigative interest; (b) a statistically significant interaction effect between the treatment condition and the levels of Investigative interest; (c) a statistically significant increase from the pretest to posttest vocational identity score with a small-medium effect size only for the treatment group; and (d) a statistically significant increase among members of the treatment group in the two items of the vocational identity questionnaire which asked about one’s self-understanding.

Although the hypotheses tested in the present study did not find any statistically significant findings, the supplemental analyses supported the effectiveness of Holland’s (1997) approach as a career counseling intervention. However, the effect sizes were somewhat small. This may be due to the experimental design which relied solely on written materials in order to eliminate extraneous variables and lacked a counselor’s help in the instruction and interpretation of individuals’ results. It is recommended in future research to integrate a counselor’s help in an experimental design to add to the body of knowledge in this profession.

Approved: ______________________________________________________

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CHAPTER ONE

Introduction

In the past five to ten years there has been growing public awareness toward the needs of systematic career counseling for Japanese youth. The globalization of business markets and the reconstruction of economic structures in Asian countries have affected not only businesspersons but also many high school and college students. The rapid structural changes in labor markets have created difficulties in career and life management dimensions for youth in Asian countries, for example, Japan (Tatsuno, 2002), China (Zhang, Hu, & Pope, 2002), Taiwan (Chang, 2002), Hong Kong (Leung, 2002), and the Philippines (Salazar-Clemena, 2002) to name a few. The Westernized economic systems and related societal values have been introduced and oftentimes adopted over the traditional systems and values in those Asian countries (Leong, 2002), which has created complexities in career counseling practices in those countries (Feller, Russel, & Wichard, 2005). As a result, today, a large number of Asian youth are having difficulty in developing their vocational identity in new economic and labor market systems (Chang, 2002; Leung, 2002; Tatsuno, 2002; Zhang et al., 2002). Japanese youth and counseling professionals are not the exception for facing those new challenges.

In order to meet the structural changes of society, Japanese counseling professionals and researchers started to study and import career theories developed in the United States (e.g., Long, Watababe, & Tracey, 2006; Muroyama & Matsumoto, 2006; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2002). However, Leong (2002) stated that the counseling approaches developed in the Western cultural context should be critically
examined when they are applied to another country. This multicultural perspective has gained increased attention in the career counseling literature (e.g., Esbroeck, Herr, & Savickas, 2005; Hesketh & Rounds, 1995; Long, 2002; Stead, 2004).

One of the widely discussed topics regarding the multicultural application of counseling theory from Western to Eastern countries is Hofstede’s (1991) typology (Hesketh & Rounds, 1995). Hofstede (1991) classified cultures into two poles: individualistic or collectivistic. In the individualistic culture, people value autonomy and make decisions using their individual responsibility; whereas in the collectivistic culture, people value the group’s harmony and rely on their family, peers, or authority figures in making important decisions. He also classified cultures based on the aspect of high power-distance or low power-distance. In high power-distance cultures people value and are loyal to authority, while in low power-distance cultures people tend to challenge authority and tradition and are open to discussing making changes in a logical manner. Examples of collectivistic and high power-distance cultures are exhibited in Asian countries. Conversely, the U.S. is an example of a low power-distance and individualistic culture. Further, Hofstede claimed that researchers need to consider these aspects when they attempt to apply psychosocial theories developed in one culture to another.

In this context, Japanese traditional employment practices are considered high power-distance and collectivistic. They are often times characterized by loyalty to the organization, a seniority-based salary hierarchy, and an importance on group performance and achievement rather than the individual’s self-actualization (Takeuchi, 2003).
Therefore, the career decision making model developed in an individualistic culture such as the U.S. may not be useful and/or effective in Japan.

In the past, cross-cultural applications of counseling theories to Asian countries was often times discussed from the perspective of cultural differences exemplified by Hofsted’s (1991) typology (Lowe, 2005). However, Shibata (2007) criticized that the characteristics of Japanese workers should not be explained only by such psychological traits. Instead he conceptualized that the characteristics of workers are the creation of Japan’s modernization and the power dynamics within institutions. In other words, the characteristics of Japanese workers are the creation of both a macro- and micro-economic environment.

Hesketh and Rounds (1995) pointed out the danger in individualistic and collectivistic based stereotyping and discussed that culture is not static, but rather a rapidly changing phenomenon. The nature of work and employment contracts in Asian countries are changing at a fast pace. It is true that Japanese employers still value traditional employment relationships (Rowley & Hall, 2007). However, considering the cultural complexities in Asian countries, which are under the influence of globalization, it is not valid to ignore the westernized aspects of Japanese culture. There are many aspects in Japanese employment practices which are continuously becoming similar to that of the U.S. Therefore, cultural differences based on the individualistic and collectivistic traits are not specific enough to categorize and explain today’s Japanese people and society, especially in the context of career development and work environment.
Savickas, Esbroeck, and Herr (2005) added that the patterns of occupational
development have become more similar across the world. These changes made it possible
to internationalize the knowledge of career counseling. Furthermore, Leong (2002)
discussed that there is a natural tendency for Eastern countries to adopt well-developed
scientific models from Western countries because those models are readily available and
many Asian students are educated in the U.S. and return to their respective countries. He
agreed that a counseling approach developed in the U.S. cultural context is expected to
possess some universal aspects which are applicable to other cultural contexts. However,
he highlighted the importance of the cultural accommodation approach in which “the
elements that may be culture-specific will have to be tested and empirically evaluated in
the new cultural contexts. When these culture-specific elements have been identified,
they may need to be replaced by culture-specific elements from the target country” (p.
282). Similarly, Savickas, Esbroeck, and Herr (2005) discussed the importance of
refining the original constructs in a psychological measurement that do not fit different
cultural contexts to new psychological constructs. They called this process

globalocalization.

While Japan has imported a few career theories and has translated some
inventories, at this point they are only shared in academic circles (Tatsuno, 2002). It is
expected that those career counseling approaches will be widely accepted in the Japanese
society due to the increased awareness of this field. For example, Holland’s (1997)
typology approach, Realistic, Investigative, Artistic, Social, Enterprising, and
Conventional (RIASEC), which is one of the most widely studied and practiced
vocational theories in the U.S., has already been introduced in Japan. Only a few studies have appeared in the professional literatures that have tested the construct of this theory with Japanese samples and have supported its construct validity (Long, et al., 2006; Muroyama & Matsumoto, 2006; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2002; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2007). However, no research has been identified which tests the effectiveness of this approach as a career counseling intervention in the Japanese cultural context, where different types of employment practices coexist. Therefore, it is valuable to study whether Holland’s (1997) typology approach can effectively help Japanese youth to develop their vocational identity in their cultural context.

Background of the Study

The Ministry of Education, Culture, Sports, Science, and Technology (MEXT) (2004) reported that career guidance in current high school systems in Japan is not effective to meet current societal changes. Tatsuno (2002) described the current practice of career guidance in Japanese high schools as only one part of services in a “department store” (p 212), in which “teachers deal with students’ academic, vocational, and school-life problems through classroom management” (p 212). MEXT (2004) pointed out that currently Japanese middle and high schools lack professionals who possess knowledge about career counseling. In such traditional systems, little attention has been paid to the individual’s occupational interests, work values, and/or life planning. In such systems the majority of students choose their workplace based on salary, prestige of the company, transportation convenience, or recommendations from a significant adult.
In the past it was a societal expectation that employers provided lifetime employment and the career ladder for their employees laid within their organizations (Hara, 1999). As such, an employee was expected to perform various jobs within one organization throughout her/his career path (Takeuchi, 2003). The necessary job training was performed by employers periodically and/or as the need arose during employment. The company or organization hired high school and college graduates based on their aptitude in terms of whether or not they could acquire new job skills and knowledge after employment. One of the best ways for job seekers to show their aptitude to be trained in new skills was to enter and graduate from prestigious colleges. Leong (2002) claimed that this system eliminated the need for career services in Japan. Additionally, Takeuchi (2003) described this Japanese career development model as a workplace/company model.

In such an employment practice Japanese high school and college students did not have to specify their future occupation in order to develop their educational plans. Instead, they placed more importance on general knowledge, communication, and social skills, and the prestige of the schools to which they went. However, many Japanese companies are no longer able to continue such traditional employment practice because of the systematic change of the Japanese economy (National Institute for Educational Policy Research of Japan; NIER, 2002).

Japan had a long economic recession in the 1990s and early 21st century (Hara, 1999; Jung & Cheon, 2006; Mitsuhashi, Uchida, & Ikeda, 2003). Due to the economic crisis and the changes in the human resource management system, many companies are no longer able to guarantee lifetime employment and provide enough job training for the
career development of their new employees (MEXT, 2004). Consequently, job seekers and employees were no longer as loyal to the company as their counterparts were before. Besides, employers began to expect potential employees to have certain vocational knowledge and skills before hiring. As a result, the labor market in Japan is becoming more similar to that of the traditional job-based employment practice in the U.S. Japanese students are expected to develop a clearer vocational identity during their high school or college years and obtain the necessary educational training to be good candidates for employment. Takeuchi (2003) described this job-based human resource management and career preparation approach as an *occupational model* (p. 251) as opposed to the traditional *workplace/company model*.

Today, Japanese people persistently value traditional lifetime employment (Rowely & Hall, 2007). This is especially prominent among white-collar workers (Jung & Cheon, 2006). The pay system, however, is becoming westernized. The seniority-based wage system has been significantly reduced, and an ability-based pay system has become popular. To sum up, in Japan there is a complex mixture of traditional and westernized features of employment practices.

MEXT (2005) reported that in order to meet the changes of industrial and economic structures as well as the fluidity and diversification of the labor market, the promotion of systematic career education for Japanese youth is necessary. It is a general consensus among educators (Miyashita, 2006), researchers (Ishii & Yoshida, 2006; Tatsuno, 2002), and government (MEXT, 2004, 2005) that there is an increasing need to accumulate a body of knowledge in career counseling theories and to develop practical
knowledge which can effectively help Japanese youth to develop their vocational identity.

Additionally, one important difference in the educational systems between Japan and the U.S. is that Japanese high school students must specify their college major at the time of the entrance examination, which typically involves intensive test preparation lasting a year or more. Once a student enters college, changing their major is generally impossible, or extremely difficult. In the past, when acquisition of professional knowledge and skills in high school and college was not an employer’s major concern, this was not a critical problem. Today, however, it is a societal expectation for Japanese youth to develop certain knowledge and skills for future jobs before being hired. As a result, the Japanese government (MEXT, 2004) is now promoting a smoother transition from school to work. It is their aim to create a strong connection between the academics in schools and the students’ future occupations in order to meet the structural changes of employment practices. For those reasons, deciding the college major or future career path during the high school years has become a crucial issue.

Considering that individuals have more responsibility than before regarding their occupational choice prior to their employment, Holland’s (1997) typology approach seems to be one useful theory to help students make occupational choices. However, only a few empirical studies on this approach have been identified (Long, et al., 2006; Muroyama & Matsumoto, 2006; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2002; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2007). While those research findings supported Holland’s hexagonal model with Japanese samples, there is no research identified in the
professional literature which tested the effectiveness of this approach. Therefore, it is important to investigate whether Holland’s (1997) RIASEC approach effectively helps Japanese high school students to develop their vocational identity, as well as examine the effects of this intervention on their perspective about job-seeking and career development.

Statement of the Problem

There were two purposes for the present study. The first purpose was to investigate the effectiveness of Holland’s (1997) RIASEC approach with Japanese high school students. Does this counseling approach effectively help them to develop their vocational identity in their cultural context where the occupational model and the workplace/company model coexist?

The second aim of this study was to explore the effect of Holland’s (1997) RIASEC approach, which is based on the assumption that individuals need to clarify their occupational interest or personality and match them to the work environment (Lowe, 2005). Do participants change their job-seeking orientation after receiving the intervention?

Research Hypotheses

This study addressed two research questions. The first question investigated the effectiveness of Holland’s (1997) RIASEC approach within the Japanese cultural context. This question involved testing the difference between the posttest vocational identity scores measured by My Vocational Situation (MVS: Holland, Daiger, & Power, 1980, p. 1) among eight groups divided by the two levels of three independent variables:
treatment condition (treatment group and control group), sex (male and female), and job-seeking orientation (workplace/company model and occupational model). A $2 \times 2 \times 2$ factorial Analysis of Covariance (ANCOVA) was used to analyze the first question. The pretest MVS scores were used as a covariate in order to reduce the error variances of posttest scores.

The null hypothesis for this first question is divided into the following seven subsequent null hypotheses including three main effects (a to c) and four interaction effects (d to g): (a) There is no statistically significant difference between the adjusted means of posttest vocational identity scores between the groups in the treatment condition and the control condition; (b) There is no statistically significant difference between the adjusted means of posttest vocational identity scores between males and females; (c) There is no statistically significant difference between the adjusted means of posttest vocational identity score between the students with the workplace/company model and the occupational model; (d) There is no statistically significant interaction effect by treatment condition and sex differences on the adjusted means of posttest vocational identity score; (e) There is no statistically significant interaction effect by treatment condition and job-seeking orientations on the adjusted means of posttest vocational identity score; (f) There is no statistically significant interaction effect by job-seeking orientations and sex differences on the adjusted means of posttest vocational identity score; and (g) There is no statistically significant interaction effect by treatment condition, sex differences, and job-seeking orientations on the adjusted means of posttest vocational identity score.
The second question investigates whether participants change their job-seeking orientation after taking the RIASEC interest inventory and searching occupational information. The null hypothesis for this question is as follows: There is no statistically significant asymmetrical change that occurs in the proportion of subjects who changed their job-seeking orientation before and after receiving the RIASEC interest inventory and conducting an occupational information search. McNemar’s test for significance of change was used for this Chi-square test analysis (McNemar, 1969).

Significance

This research problem is significant to counselors, researchers, and educators who are involved in the career development of Japanese youth because of the theoretical and practical implications. Theoretical implications of the research include gaining a further understanding of how Holland’s (1997) RIASEC approach works differently in the Japanese cultural context in terms of the types of job-seeking orientation and sex. Furthermore, this study could increase the awareness of how the traditional U.S. based career intervention impacts the different types of job-seeking orientation of Japanese students.

In addition to theoretical implications, this research also has practical implications. The findings provided empirical evidence on positive and/or negative aspects of utilizing Holland’s (1997) theory in career counseling and education in the Japanese cultural context. It also informs the reader how Holland’s theory can be utilized in career counseling practice, as this has not been recognized yet by many helping professionals in Japan.
Limitations and Delimitations of the Study

Due to the lack of a comprehensive occupational information system which is linked with Holland’s (1997) RIASEC codes in Japan, participants were asked to utilize the O*Net website and needed certain English literacy skills. In order to overcome the language barrier, participants were recruited through Japanese schools in the U.S. There are thousands of children from Japan whose parents work for Japanese companies in the U.S. They will typically go back to the country after three to five years of their parents’ job duties. Among those children, high school students (10th to 12th graders), who are temporarily residing in the U.S. and planning to go back to Japan permanently or for job hunting were asked to participate in this study. The high school students did not represent the majority of Japanese students who reside in Japan in terms of exposure to American culture and the English speaking environment. These conditions may have greatly affected their perspectives on their career development. For this reason, the generalizability of this study to the Japanese population is limited.

Another limitation involved the lack of research on the construct of RIASEC typology (Holland, 1997) for equivalent occupations in Japan. Although Holland’s theory and its personality tests have been introduced to Japan (Long, et al., 2006; Muroyama & Matsumoto, 2006; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2002; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2007), there was no empirical research identified which had investigated the RIASEC typology of each occupational environment in Japan. The classification developed in the U.S. may not have been a perfect match with the occupations in other countries. Therefore, the effect of the intervention in this study
Definitions of Terms

Independent Variables

The first variable was sex. Sex referred to the self-identified sex of an individual. Participants were asked to indicate whether they are male or female on the demographic question in this study.

The second variable was participants’ job-seeking orientation. Job-seeking orientation referred to the attitude or approach of Japanese job seekers on how to obtain a certain job and/or how to view one’s career development. This is not a psychometrically validated construct. However, considering the cultural difference of employment practices in Japan, this dimension needs further investigation in the process of internationalization of a career theory.

In the present study, two types of job-seeking orientation were investigated: the occupational model and the workplace/company model. The former was conceptualized such that a job seeker prefers to decide his or her desirable future occupation and obtains necessary educational training, then looks for a workplace where he/she can do this occupation and develop his/her career. The latter was conceptualized such that a job seeker prefers to decide on an organization or company where he/she wishes to work and takes various jobs assigned by the employer and climbs the career ladder within the organization.

Participants were asked about their perspective regarding their job-seeking and
career-development approach on the demographic questionnaire at the pre- and post-intervention (Appendix C). The English translation of this specific question is further discussed in chapter three.

The treatment condition was the third variable. The treatment group in this study received the Vocational Readiness Test (Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2007). This test is based on Holland’s (1997) RIASEC theory and was developed for Japanese high school students. It provided the test taker with his or her RIASEC personality types. After taking the test, participants received written instructions on how to search for occupational information on both Japanese and English websites by using their RIASEC feedback. The details of these websites are discussed in chapter three.

The control group was placed on a waiting list. They received the RIASEC assessment and the same instructions on the occupational information search after the posttest.

Dependent Variable

Vocational identity refers to “the possession of a clear and stable picture of one’s goals, interests, personality, and talents. This characteristic leads to relatively untroubled decision-making and confidence in one’s ability to make good decisions in the face of inevitable environmental barriers” (Holland, Daiger, & Power, 1980, p. 1). My Vocational Situation (MVS; Holland, Daiger, & Power, 1980) was used to measure this variable.
CHAPTER TWO

Review of the Literature

The literature review provides an introduction and reviews of the relevant literature. The present study deals with the career development of Japanese high school students as it relates to the career counseling intervention based on Holland’s (1997) theory. In order to cover the relevant literature regarding this topic, this chapter is organized into four major sections: (1) career choice, employee development, and sex differences in Japan, (2) career development of adolescents, (3) Holland’s (1997) typology approach, and (4) the use of the internet for an occupational information search.

The first section discusses the unique employment practice in Japan. This section also looks at the historical and economical aspects of this employment practice and how these affect sex differences and one’s career choice and development pattern. The second section delineates the career development of adolescents, including an overview of major developmental theories, a critical review of empirical findings on vocational identity, and frameworks for providing career counseling interventions in American and Japanese school systems. The third section discusses the applicability of Holland’s (1997) theory to Japanese culture, including an overview of Holland’s theory, a critical review of the empirical findings on the construct validity of his theory in the U.S. and Japan, and a review of empirical findings of his theory as a career counseling intervention.

Considering the treatment condition of the present study which involved searching occupational information on the internet after taking the Holland’s interest inventory, the
last section reviews the relevant literature regarding the use of the internet for an occupational information search.

Career Choice, Employee Development, and Sex Differences in Japan

The multicultural applications of counseling theories need to be carefully investigated in the light of the cultural differences before their actual implementation. In this process, it is important to look at two aspects of a particular counseling theory: etic (i.e., universal) and emic (i.e., culturally specific) aspects (Niles & Harris-Bowlsbey, 2002). The etic perspective argues that a counseling theory has universal applicability to other cultural contexts, whereas the emic perspective contends that it is important to develop counseling theories that are specific to the client’s culture. Leong (1993) stated the importance of incorporating useful elements of both perspectives and suggested the cultural accommodation approach. Similarly, Savickas (2003) proposed a term, “globalocalization,” which means applying the general knowledge on career counseling theories to other cultures and then adapting them to meet the local cultures. For this reason, it is important to look at the business and economical background of Japan as it compares to that of the U.S. in order to understand the similarities and uniqueness of both cultures as well as to consider the applicability of Holland’s (1997) career counseling approach to Japanese culture.

Career Choice Patterns in Japan

Until the late 20th century, the traditional view of employment practice and human resource management in the U.S. is characterized as a job-based approach (Lawler, 1994). In this view, jobs are the basic units which build a complex organization. They can
be organized with job-descriptions which list the individual’s occupational duties and activities. An employee is selected based on whether or not he/she fits the job and/or possesses skills and knowledge to perform the given job activities. Within this perspective Holland’s (1997) career counseling theory, which encourages people to choose their occupations based on their interests, seems helpful, because jobs are seen as static and stable entities.

However, as the globalization of business competition impacts organizations, they are challenged to face an environment which becomes less predictable and less stable (Lawler, 1994). In such an environment, the job-based approach has a disadvantage of lacking flexibility to adjust to new environments. Instead, organizations need to constantly change their structures in order to face a rapidly changing environment. In such a business practice where organizations and their jobs cannot be seen as static, an individual needs to change their work contents and keep on learning new skills in order to meet the environmental changes. Individuals are seen as important human resources and the building blocks of an organization. The capabilities, or competencies, of individuals to adjust to continuously changing business environments have been viewed as the key factors for the future success of an organization in the U.S. especially since the early 1990s. This new system is called the competency-based approach.

If the trend of this human resource management continues to become widespread, the traditional career counseling approach, including Holland’s (1997) theory which helps individuals to choose an occupation with a set of static occupational activities, may reduce its effectiveness. In a similar vein, it is unknown whether or not Holland’s theory
can effectively help Japanese students to develop their vocational identities in their cultural context, where typically employers have the authority to assign their employees jobs and offer frequent job transfers.

Although it was not until the late 1990s when Japanese companies started to adopt the competency-based approach (Imura, 2005; Iwawaki, 2007), the traditional Japanese business model has seen a person as an important human resource for a company. Japanese companies have placed primary focus on hiring new high school and college graduates based on their abilities to acquire new knowledge and skills which the company wants them to learn (Nagano, 2007). In this employment practice, students’ and/or job seekers’ aspirations for a certain occupation or a job in the company are not as important as the organizations’ human resource management plan, and are often times not considered for their job placement.

It is true that in Japan there are some jobs whose occupational activities are somewhat fixed and clear or specialized. This enables students and/or job seekers to choose their occupation and determine certain educational or vocational training before entering the world of work. The examples of those occupations include teacher, nurse, physician, taxi driver, chef, and lawyer. Those occupations require a certain body of knowledge, special trainings, and licenses. In those occupations one’s career choice will be reflected in his or her future occupational activities. Takuchi (2003) categorized this career choice model as shokugyou-model, or an occupational model. This model can be considered as the same career choice and development model as the traditional career choice model in the U.S.
However, Japanese company employees have a different career choice and development pattern (Takeuchi, 2003). Takeuchi discussed that a small number of students may pursue a specialized career choice, such as being a medical doctor or a lawyer, while a majority of Japanese students may unconsciously hold an ambiguous image of being a salaryman or office lady (OL). According to Shibata (2007), the Japanese term, salaryman, has already become an English term. It represents a contemporary Japanese, hardworking, dedicated businessperson. This type of person is famous for having a work-centered life style at the expense of family matters. Their hard work constitutes one of the factors that lends itself to Japan’s strong economy. The term OL, an abbreviation of office lady, is widely used in Japan to represent typical female workers working in clerical or conventional jobs in a company (Komagawa, 2007).

Salaryman and OL’s job descriptions and occupational activities are not predetermined at the time of recruitment (Takeuchi, 2003). High school and new college graduates rarely have choices of what kind of jobs they do in a company (Nagano, 2007). Instead, companies assign departments and jobs to them. They may be placed in an accounting, human resource, or sales department and be expected to acquire new skills and knowledge through in-house job trainings. During the process of climbing the career ladder, employees are transferred to other departments and are expected to acquire a wide variety of knowledge and skills in the company. There is a very weak link between one’s college majors and one’s future occupation (Takeuchi). Takeuchi called this career choice and development model a shokuba/kaisha model, or workplace/company model. He discussed that after World War II, especially during the rapid economic growth from the
1960s to 1970s, salaryman and OL became the majority of the Japanese labor force and the dominant career development model for Japanese males and females.

**Employee Development of Japanese Males**

In the past, employment practices in Japan were best characterized by lifetime employment and seniority-oriented payment (Ministry of Health, Labor and Welfare [MHLW], 2007). Mostly only male workers were entitled such employment contracts (Shibata, 2007). Companies hire a group of new high school and college graduates all at once every year in April (Nagano, 2007). Employees were expected to work for the same organization until they retired. This was also true of the local and central governments. Their wages increased as they got older (Shibata, 2007; Takeuchi, 2003; MHLW, 2007).

Companies recruited new college graduates as *sougou-shoku*. It literally means a synthetic or comprehensive occupation. This *sougou-shoku* is generally divided into two areas: (a) management and clerical area, and (b) technical area. New graduates who studied such topics as business, economics, politics, or law in college are treated as managers and clerical *sougou-shoku*. Those who studied science, for example, engineering, biology, or chemistry, are placed in a technical *sougou-shoku*. These *sougou-shoku* employees are the candidates for the executive manager positions in a company. The companies do not specify the department or occupation at the time of hiring (Nagano, 2007). The new college graduates in *sougou-shoku* are hired based on their potential ability to acquire new job skills and knowledge regardless of their college majors and what they can do at the time of job searching, except some math and science-oriented workers who have specialized areas. The best way for job hunters to
show their potential is to enter and graduate from prestigious colleges (MHLW, 2007; Nagano, 2007). In such a culture, the company does not expect their new employees to have certain job skills and knowledge, but rather expects them to be trained in various assigned work domains. Leong (2002) claimed that this system eliminated the need for career services in Japan.

For a company, hiring a large number of college graduates all at once every year is a cost effective way to manage human resources in order to retain a certain number of employees and train them collectively and simultaneously (Nagano, 2007). Oftentimes people hear that “white textile can be dyed any color, but the textile which already has a certain color is difficult to dye” (Nagano, 2007, p.5). Climbing the career ladder by taking various job assignments in a wide variety of departments and different branches in and outside of the country was the basic course of life for Japanese males (Harayama & Kashiwagi, 2004). At the same time the competition within the company in seeking promotion, especially between the cohorts, increased (Shibata, 2007). This power dynamic within the organization drives Japanese employees to work hard for, and to be dedicated to, their company. Through these processes Japanese employees became loyal to their company as if the white textile had been dyed the company color.

This stereotypical image is known as the Japanese salaryman, who sometimes ends up with karoushi, or death from overwork (Shibata, 2007). Japanese male workers are conditioned to view their work as the center of their life by placing virtually all family matters on their wives. Shibata (2007) conceptualized that the characteristics of such hard working Japanese male workers were a creation of Japan’s modernization which
increased the business competition between corporations and the competition for promotion between the employees. This competition was also enhanced by the middle class where a majority of Japanese people a couple of decades ago dreamed of having a modern American family life like they saw on TV dramas. Shibata discussed that this is why Japanese workers work so hard for their company and refuse to simply explain their work values and ethics as either individualistic or collectivistic psychological traits exemplified by Hofsted’s (1991) typology.

As previously mentioned, hiring a large number of new college graduates is especially prominent among large companies. However, middle and small size companies are not able to compete with large companies when hiring new graduates as *sougou-shoku* (Nagano, 2007). This represents the prestige of working for a large and famous company as a *sougou-shoku* without choosing a specific occupation.

Experiencing the globalization of the business competition and the long economic recession which started in late 1980s, Japanese companies have had to put more focus on short-term benefits and the reduction of the cost of their products (MHLW, 2007). As a result, many companies are no longer able to guarantee lifetime employment, seniority-oriented payment systems, and plentiful job training opportunities for their employees (MEXT, 2004; MHLW, 2007). Although the employee training budget increased slightly after the year 2002, it had been dramatically decreased from 1988 to 2002 (MHLW, 2007). As the business competition became increasingly complex, the collective human resource management training became obsolete and is currently being replaced by more individualistic management (Cabinet Office, 2001). Accordingly,
companies had to develop a cost effective wage system based on more valid and reliable ways to assess their employees’ performance (Iwawaki, 2007).

Competency-based human resource management was introduced to Japan when Japanese employment practice was experiencing systemic change in the late 1990s (Iwawaki, 2007). In the U.S. the studies on competency-based approach originate with the work of McClelland (1973) and Boyatzis (1982). Other researchers (e.g. Klemp, 1980; Spencer & Spencer, 1993) and consulting agencies also started to use the term competency in their research and business consultation (Imura, 2005; Iwawaki, 2007; Ohno, 2006). Although the definition of this term is ambiguous and slightly differs depending on the researchers and consulting agencies, it generally means an individual’s behavioral and thought patterns which lead to one’s job success. It includes not only apparent abilities such as certain set of skills and knowledge, but also potential traits that influence one’s job success such as one’s values and personality.

Japanese companies eagerly started to import the competency-based human resource management beginning in the late 1990s (Imural, 2005), but the definition of competency was changed from its original meaning in the U.S. Because Japanese companies needed valid and reliable tools to assess current employees’ performance as discussed above, they only adopted the meaning of apparent abilities and excluded the notion to assess one’s potential capabilities (Iwawaki, 2007; Ohno, 2006). The competency-based approach also started to be used in the employment of new college graduates, however, Iwawaki’s study revealed that many companies are having trouble applying this approach to young adults with no or few previous work experiences.
Iwawaki pointed out that in this particular context the term competency only means the minimum or standard abilities to become a responsible working adult.

Although it seems that Japanese companies still do not have a valid and reliable way to assess the potential abilities of new high school and college graduates which meet the value of lifetime employment cost, Japanese government (MHLW, 2007) and the economic circles (Nagano, 2007), however, still perceive lifetime employment as a factor of long-term strength of the Japanese economy and strive to keep it. It is expected that companies begin to place more importance on their employment and employee training only with the small number of selected long-term employees who work in core management areas and specialized areas (MHLW, 2007). The reduction of employee training cost and the shrinking labor market for other peripheral and/or blue-collar workers have negatively influenced the people with lower educational backgrounds.

Until 1997, high school graduates had been the largest new work force in Japan (Hara, 2005). However, in the past 10 years, a weak economy and a shrinking labor market negatively affected this population. Hara reported that in 1992 one company hired 26.6 new school graduates on average. This consisted of 9.3 college or higher degree graduates, 11.2 high school graduates, and 6.1 other school graduates including those from two-year colleges and technical schools. In 2004 these numbers changed and became 6.4 college or higher degree graduates, 3.4 high school graduates, and 1.5 other school graduates. This change indicated that there was a 70% reduction in employment for new high school graduates, and a 31% reduction for new college graduates.
In the past, although male high school graduates were generally not considered for sougou-shoku positions, they were hired as regular employees who were also entitled to lifetime employment and seniority-oriented wages (Shibata, 2007). Hiring younger employees required more educational investment and raised the risk for profit withdrawal. Today, this population has been replaced by “irregular” employees such as part-time workers and temporary employees who are not entitled to the benefits and a promotion prospect which “regular” employees have (Hara, 2005). Companies are also shipping plant activities overseas and/or outsourcing jobs which used to be done by high school graduates. Hara concluded that employment conditions for workers with lower educational backgrounds will continue to be harsh.

*Employee Development and Life-course of Japanese Females*

Although Japan has become one of the highest developed countries in the world and both males and females enjoy the wealth of economic growth, Japanese women are still struggling with unequal opportunity in the labor market compared to male workers. Historically, Japanese women were the important labor force for farming, handicraft, and trade (Cabinet Office, 2001). They were also the center of the family fortune inheritance. However, during the medieval period when the samurai class increased their power and Confucianism spread in Japan, the domination of men over women became a societal value. After the end of the Samurai period, this trend was strengthened by the new government, which started in 1868. After World War II, voting rights were given to women and the constitution declared equality of sexes in 1946. Japanese women have gradually increased their rights under this constitution and law
(Cabinet Office, 2001), however, their status in the labor force continues to be lower than that of males.

As the Japanese economy developed rapidly, especially from 1955 to 1973, the Gross National Product (GNP) grew to the second highest in the world (Ishii, Kasahara, Kodama, & Sasayama, 2000). During this period, a large number of Japanese males were employed in the growing industries and many families moved to large cities (Cabinet Office, 2001). By this movement, the salaryman’s modern family image became the dominant family image in Japan (Shibata, 2007). More precisely, a man worked hard for his company, while a woman became a household manager who dominated the “modern” style kitchen like they saw on American TV dramas.

Shibata (2007) conceptualized that Japanese companies strategically enhanced this gender division of labor in the family by human resource management. Japanese corporations educated the housewives of their male employees to “recuperate their husband’s labor, both physically and emotionally” (p.373) and free their male employees from family responsibilities so that they can concentrate on their work. In other words, male workers’ long, dedicated, hard work was inextricably linked to the existence of their “good wives” as household managers. Japanese corporations viewed that the male workers’ family belonged to the company and provided various benefits, at the same time they enforced the social structure which in turn resulted in the benefit of the company.

While males became the core workers in a company due to lifetime employment, in-house job training, and loyalty to the company, females were treated as a peripheral labor force (Cabinet Office, 2001) and were responsible for only subsidiary and
conventional jobs (Ishii, 1997) with no prospect for promotion (Shibata, 2007). Except the case of a woman who obtained special training or an advanced degree, the majority of the female peripheral workers were expected to quit their jobs at the time of their marriage or childbirth. Those women who wanted to return to the labor market after years of childrearing had no choice but to accept peripheral jobs in a company as a part-time worker because of their less developed work skills. Part-time workers did not have job security and were the buffer for a company to control labor costs in times of financial difficulties. This system caused women to go back to, or to keep their time for, household management.

In order to eliminate such discrimination against women, the Law for Equal Employment Opportunity of Men and Women (Equal Employment Act) was put into operation in 1986. By this law Japanese women were given the opportunity to obtain the same position and wages as male workers in a company (Ishii, 1997). In order to accommodate the new law, many companies adopted a dual career ladder system and provided a *sougou-shoku* career path for females (Ishii, 1997; Komagawa, 2007). Female job hunters were now able to apply for either a *sougou-shoku* career course or *ippan-shoku* career course. *Ippan-shoku* literally means an ordinary or general job. It includes subsidiary duties and conventional work. However, Ishii (1997) and Komagawa (2007) claimed that the actual condition of the dual career ladder system has been a gender-based employment system. Furthermore, Komagawa argued that the career course employment system is an indirect act of gender discrimination. Females have more barriers in applying for *sougou-shoku* career courses than males, and are indirectly forced
to apply for *ippan-shoku* positions. Females in *ippan-shoku* work on, for example, a service counter in a bank, while male *sougou-shoku* workers deal with the financing, investment, and new business planning. Ishii (1997) pointed out that under the career course employment system, the *sougou-shoku* recruitment sought both males and females equally, however the actual employment was dominated by males.

Employers expect all *sougou-shoku* applicants, regardless of their sex, to be loyal to the company and employed long-term (Ishii, 1997). In other words, female *sougou-shoku* applicants are expected to adopt a work-centered life style at the expense of their personal life, as male workers do. As discussed above, companies expect that the wives of male workers take all or most of the family responsibilities so that the male workers can work as long and hard as they can (Shibata, 2007). Female *sougou-shoku* applicants were evaluated on the basis of their capacity to work with and compete against their male worker cohort (Ishii, 1997). In turn, many Japanese women have had difficulty in dealing with work, house chores, and child rearing. They often end up quitting their jobs at the time of marriage or childbirth. Employers are also having difficulty in predicting how long female job applicants can actually work for the company. As a result, there continues to be more male workers in *sougou-shoku*, and more females in *ippan-shoku*.

Consequently, today’s Japanese female age/labor participation graph still shows an M curve (Ishii, 1997; Manabe, 1997; Morinaga, 1997, MHLW, 2007). Women’s age and participation in labor peaks in the woman’s early 20s (74.5%) and late 40s (71.9%), and the center-bottom point of the M curve is at their early 30s (52.7%) (Morinaga, 1997).
Compared to the labor participation of Japanese males, which is fixed at 98% until their retirement age, many Japanese women take more responsibility for child rearing and house chores after marriage than men. In the U.S. and Canada, the female labor force population is somewhat fixed at 75% from the early 20s to early 50s. The Japanese government (Cabinet Office, 2001) concluded that Japanese women as a labor force are still behind men and are not given enough opportunity and the environment to work equally with male workers.

The labor market for female high school graduates is as harsh as that of males today (Hara, 2005). Companies used to hire many high school graduates for *ippan-shoku*, however, the shrinking labor market made female college graduates entering the labor market competitors of the high school graduates. Moreover, companies are shifting some of their higher level work which used to be done by *sougou-shoku*, to the *ippan-shoku*. This has made high school graduates become less competitive in the labor market.

*The Needs of Two Career Choice Models*

As discussed above, the career choice and development model in Japan can be categorized into two models: the occupational selection model (*occupational model*) and the workplace/company belonging model (*workplace/company model*). The increased awareness toward the needs of career counseling and education (MEXT, 2004) is due to the drastic changes in the employment practices of the Japanese companies. Although the government (MHLW, 2007) and business sector (Nagano, 2007) still strive to keep the lifetime and *sougou-shoku* employment, the number of employees who are entitled to that status has been reduced and is expected to remain small. Companies have to utilize
various forms of lower cost “irregular” employees, while a smaller number of 
sougou-shoku employees manage the core and higher level work activities. It is expected 
that workplace and company based career development models will still remain, but will 
not be as dominant as they were before.

Companies have also reduced the cost of job training (MHLW, 2007). As a result, 
companies have begun to select job applicants with higher educational backgrounds for 
both sougou-shoku, as a core worker, and ippan-shoku, as a peripheral worker (Nagano, 
2007). This trend is based on the expectation that they can acquire new skills and 
knowledge quickly (Nagano, 2007). The cost reduction of the job training also results in 
the companies’ preference for hiring applicants with certain occupational skills and 
knowledge. This indicates the importance of career counseling system based on the 
occupational model.

Women continue to be discriminated in the selection of sougou-shoku (Ishii, 
1997; Komagawa, 2007). Despite the implementation of laws that protect their rights, 
their career development, based on the workplace/company model, still seems to have 
more barriers than male workers. Considering higher wages of female workers with 
specialized or advanced educational training (Ishii, 2004), career development models 
based on the occupational model might appear to be more appealing for them to have a 
meaningful career path throughout their life. Thus, the career choice model and sex 
differences seems to be important variables in the application of career theories from the 
U.S. to Japan.
Career Development of Adolescents

This section discusses the importance of career identity development of adolescents from a developmental perspective and empirical findings. It also reviews the career development frameworks in American and Japanese school systems.

Developmental Perspectives in Vocational Theories

Major developmental theorists in the field of career counseling, such as Ginzberg, Ginsburg, Axelrad, and Herma (1951), Super (1990), and Gottfredson (1981), suggest that there are several stages in one’s career development. Those stages are characterized by the specific developmental tasks and issues a person needs to accomplish during certain periods of time in his or her life.

Ginzberg and Associates. The team of Ginzberg et al. (1951) consisted of an economist, a psychiatrist, a sociologist, and a psychologist who were early leaders in viewing career development as a series of stages (Herr & Cramer, 1992). From their research findings (Ginzberg et al., 1951) they concluded that there are three stages in the process of one’s career development: fantasy in childhood (before age eleven), tentative in early adolescence (ages 11 to 17), and realistic in middle adolescence (ages 17 to young adult). The fantasy stage is characterized as a play-oriented period. In the initial phase of this stage a child’s play is purely play oriented, but moves toward becoming work oriented. The tentative stage is described as a transitional process where adolescents begin to recognize the characteristics of work satisfaction such as interests, abilities, work rewards, values, and time perspective. High school students can be categorized in this stage as well as the next stage labeled realistic. The realistic stage is conceptualized as an
integration of one’s capacities and interests, further clarification of work values, specification of vocational choice, and crystallization of occupational patterns (Ginzberg et al., 1951). Later Ginzberg (1984) noted that occupational choice is a life-long process in one’s vocational life. As one’s career goals and the realities of the world of work change over time, he/she needs to repeatedly assess how she/he can improve the fit between oneself and her/his environment in order to seek better satisfaction.

Donald Super. Another major developmental theorist, Super (1972), conceptualized the stages of vocational development from birth to adult. From birth to the early adolescence (birth to age 14 or 15) is the Growth stage, during which an individual develops the capacity, attitudes, interests, and needs associated with the self-concept. Next is the Exploratory stage, which begins in adolescence and extends to early adulthood (ages 15 to 24). During this period an individual may make a tentative, but not final, occupational choice.

In addition to identifying stages, Super (1972) also clarified the vocational developmental tasks that a person should accomplish during each stage. During ages 14 to 18, which is called the Crystallization period, an individual develops a general vocational goal by considering her/his available resources, interests, and values, and by planning for a desired occupation. In later research, Super (1990) further elaborated that the developmental tasks of adolescents and young adults (ages 14 to 25) included giving less time to hobbies, verifying current occupational choices, starting his/her career in a chosen field, learning more about opportunities, and developing a realistic self-concept.
Moreover, Super (1974) discussed six important dimensions of career development specifically for adolescents:

1. Orientation to vocational choice is defined as an attitudinal dimension determining whether an individual is concerned with an eventual vocational choice;
2. Information and planning is a competence dimension relating to the specificity of information individuals have concerning future career decisions and past planning [that the individual has] accomplished;
3. Consistency of vocational preferences, defined as individuals’ consistencies of preferences;
4. Crystallization of traits, where individuals progress toward forming a self-concept;
5. Vocational independence, defined as an independence of work experience; and
6. Wisdom of vocational preferences, which concerns an individual’s ability to make realistic preferences consistent with personal tasks (p. 13).

These theoretical explanations are integrated into Super’s comprehensive career perspectives via the life-career rainbow. His theory is one of the most influential career theories and has received continuous attention in career research and practices (Herr & Cramer, 1992).

Linda Gottfredson. Gottfredson (1981), who is also an influential developmental theorist, discussed how people develop self-concepts which become increasingly complex and differentiated from childhood to adulthood. She argued that the key determinants of one’s self-concept are her/his social class, intelligence, and experiences with sex roles. According to her, an individual becomes oriented to sex roles at ages six to
eight and then oriented to social valuation around ages nine to thirteen by developing preferences for a level of work based on his/her social class and ability level. In her theory, the high school years are classified as the orientation to the internal, unique self. This stage, which begins around age fourteen, is a period in which adolescents increase self-awareness and perception of others and develop more specific vocational desires based on their self-image, gender images, and social class. In other words, children and adolescents, as they get older, create categories of acceptable jobs which are congruent with their self-concept based on tolerable sex-type images, tolerable levels of prestige, and tolerable levels of effort to achieve their goals. She argued that an individual creates cognitive maps about the self and occupations and seeks compatibility between these two.

*James Marcia.* Another theorist who is frequently cited in adolescent career development research is Marcia (1980). He elaborated the psychosocial conceptualization of identity development described by Erikson (1968). Marcia argued that there are four identity statuses: identity diffusion, identity foreclosure, identity moratorium, and identity achievement. These statuses are categorized by looking at two dimensions: crisis and commitment. The Crisis dimension is the process of engaging in activities to explore one’s identity eventually leading to commitment. Commitment refers to the possession of a clear sense of one’s identity. Identity diffusion is the state in which a person has never experienced a crisis and has not achieved a sense of commitment. In general, diffusion is a lack of interest in seeking one’s identity. Identity foreclosure is characterized as never having the experience of a crisis yet having a sense of commitment. Usually this status is
achieved by adopting roles and values of early identification figures such as one’s parents. Identity moratorium is the state in which a person is experiencing a sense of crisis but commitment has not yet been achieved. It is characterized by inner struggle and exploration. Last, identity achievement refers to having experienced crisis and achieving a sense of commitment. A person has gone through the various identity exploration activities, which has resulted in ego synthesis. This conceptualization of identity formation has been applied to various identity domains such as vocational, social, religious, political, and overall identities. However, according to Skorikov and Vondracek (1998), for high school students, the formation of vocational identity is particularly important because it plays a leading role in developing a clear sense of their identities in other domains.

**Summary.** To sum up the major characteristics of adolescent career development, the high school years can be characterized as a realistic preparation period for entering the world of work. This process requires students to increase their self-awareness by understanding and clarifying their own interests, abilities, aptitudes, and work values. This process involves inner struggles, which eventually leads to the establishment of one’s self-concept and unified identity. Although high school students are not expected to make final vocational decisions, they make realistic and tentative career goals as well as future educational plans based on their self-concepts. Thus, establishing a unified self-concept and vocational identity is an inevitable process as they prepare to enter the world of work. However, in the past, the Japanese educational system has been indifferent with the issue of adolescents’ vocational development. Today it is a societal
need to help them to establish their age appropriate vocational identity. Therefore, understanding the developmental perspectives of adolescents’ career identity can build the foundation for providing an age appropriate career counseling intervention designed for the present study.

**Vocational Identity of Adolescents**

This section discusses vocational identity and the empirical findings on the development of vocational identity for adolescents. Although the present study employs the Vocational Identity subscale of the assessment, My Vocational Situation (MVS; Holland, Daiger, & Power, 1980), to operationalize this variable, the term vocational identity is not limited to the score on the MVS. Therefore, it is important to present it as a broader concept as discussed in the professional articles that follow.

Vocational identity is a term defined by Holland, Daiger, and Power (1980). It means “the possession of a clear and stable picture of one’s goals, interests, personality, and talents” (p. 1). Empirical research dealing with this particular construct generally uses the Vocational Identity subscale of the MVS (e.g.; Diemer & Blustein, 2007; Gushue, Scanlan, Pantzer, & Clarke, 2006; Leong & Morris, 1989; Lopez, 1989; Robitschek & Cook, 1999). According to Holland et al., a person who has a clear vocational identity is thought to have less trouble in career decision-making and more confidence in pursuing his/her occupational goals.

In the professional literature, however, the term vocational identity is not strictly limited to the construct proposed by Holland et al. (1980). Researchers use this term to broadly describe career identity development such as in the context of Marcia’s (1980)
identity formation or by using psychological instruments other than the MVS (e.g., Goede, Spruijt, Iedema, & Meeus, 1999; Vondracek & Skorikov, 1997). The term vocational identity is also used interchangeably with the term career maturity.

More precisely, the term career maturity was first defined by Crites (1978). It means the possession of definite career choices and making consistent and realistic career decisions over time. Leong and Morris (1989) investigated the similarity of the two constructs: career maturity and vocational identity. Their research \( (n = 86 \text{ white college students}) \) found that these two constructs are highly correlated \( (r = .69, p < .05) \), but are not an identical construct. They suggested further research to investigate the differences between these two constructs.

Although the difference between these terms has been studied, and refined to some extent, in this section the findings on career maturity (Crites, 1978), vocational identity which is assessed by various measurements, and Marcia’s (1980) identity formation are also included in order to thoroughly delineate adolescents’ overall occupational identity development.

A number of researchers have studied the career development of adolescents and found that vocational identity development is one of the most important and central tasks in an adolescent’s life (e.g., Goede, Spruijt, Iedema, & Meeus, 1999; Lopez, 1989; Vondracek & Skorikov, 1997). Therefore, it has great impact on, and is impacted by, the various aspects of one’s life ranging from overall mental health (Goede et al., 1999) to many other aspects of daily life, such as the relationship with parents (Lopez, 1989) and school adjustment (Vondracek & Skorikov, 1997).
According to a study (n = 1,222 Dutch adolescents aged 12-24) conducted by Goede et al. (1999), vocational identity had a significant relationship with the adolescent’s general mental health (the standardized coefficients were .24 for both sexes, \( p < .05 \)). This result suggested that the clearer one’s vocational identity was, the better one’s mental health. Similarly, Skorikov and Vondracek (1998) examined the impact of vocational identity development on adolescents’ overall identity development (n = 1,099; 7th to 12th graders). Specifically, they looked at Marcia’s (1980) identity formation and its relation to the following identity domains: general ideological, vocational, religious, lifestyle, and political identities. They found that the number of students in diffusion status decreased as their age increased. On the other hand, the numbers in moratorium and achievement status are increased. Additionally the numbers of students who were in the moratorium and achievement statuses were considerably higher in the vocational identity domain than in any other identity domain for both genders. By the twelfth grade more than 40 percent of students entered the moratorium stage of vocational identity and about 20 percent reached achievement status. The researchers argued that in adolescence the advancement of vocational identity played a leading role in the development of one’s other identity domains.

Vocational identity is also related to other aspects of a young person’s life. Vocational stressors, such as being unemployed, having a disability, and/or having significant financial problems, have a negative impact on vocational identity formation (Goede, et al., 1999). This negative impact was significantly stronger for boys (the standardized coefficient was -.35, \( p < .05 \)) than for girls (-.18, \( p < .05 \)).
Chronic career indecision also relates to vocational identity (Conneran & Hartman, 1993). This study with vocational high school twelfth graders \((n = 126)\) found that both males and females who were chronically career undecided had significantly lower MVS vocational identity scores than career decided students, 

\[\text{male } t(69) = 13.44, p < .01; \text{ female } t(39) = 8.29, p = .001.\]

Additionally, Leong and Morris (1989) found that college students’ \((n = 86)\) vocational identity scores on the MVS had a significant relationship with their personality (social anxiety and an intolerance of ambiguity). Social anxiety and intolerance of ambiguity were negatively correlated with the vocational identity score \((r = -.21 \text{ and } -.26 \text{ respectively, } p < .05)\). Similarly Lopez’s (1989) study with college students \((n = 199)\) found that trait anxiety was a significant predictor of the MVS vocational identity score. It accounted for 15% and 10% of the variances for males and females respectively \((p < .001)\). These consistent findings indicate that adolescents who have a tendency to be anxious need more help from a counselor to crystallize their vocational identity.

Leong and Morris also investigated the relationship between vocational identity and work values. They found that people who valued using special abilities \((r = .24)\), being creative and original \((r = .22)\), and exercising leadership \((r = .31)\) tended to possess a clearer vocational identity \((p < .05)\). They concluded that those work values may have been enhanced by the already crystallized vocational identity.

Cognitive styles also impact one’s vocational identity. Gushue, Scanlan, Pantzer, and Clarke (2006) found that career decision-making self-efficacy was a significant predictor for the development of vocational identity among African American high school
students \((n = 72)\). Univariate analysis revealed a positive significant relationship, 

\[ F(1, 71) = 7.06, p < .01. \]

Moreover, Robitschek and Cook (1999) studied the influence of personal growth initiative and coping styles on vocational identity. Personal growth initiative is defined as “active, intentional engagement in the process of personal growth” (p. 128). It encompasses cognitions and behaviors which support and enact the motivation for personal growth. The path analysis with a college student sample \((n = 205)\) found that the personal growth initiative had a positive significant relationship with vocational identity (standardized coefficient \(.53\) for both sexes, \(p < .05\)). The researchers concluded that the students who were highly motivated for personal growth were likely to have a more crystallized vocational identity. However, their study did not find a significant relationship between reflective and reactive coping styles and vocational identity.

In addition, Leong and Morris’s (1989) study with a college student sample \((n = 86)\) found that a rational decision-making style had a positive correlation with vocational identity \((r = .37, p < .05)\), whereas an intuitive style and a dependent style had low \((r = -.35)\) and moderate \((r = -.60)\) negative correlations respectively \((p < .05)\). They also found that among Holland’s (1997) six vocational interests (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) only the Investigative had a small but significant positive relationship with vocational identity. The authors stated that this finding was consistent with the aforementioned positive correlation between a rational decision-making style and vocational identity, because Investigative types like to obtain new knowledge, rules, and laws, and employ systematic, rational thinking styles. None of
the other interest types had a significant relationship with vocational identity, suggesting that the level of difficulty required for the development of vocational identity does not differ for other interest types.

In addition to the cognitive styles, family dynamics is also a factor on adolescent vocational development. Lee and Hughey (2001) studied the relationship of psychological separation and parental attachment to the career maturity of college freshman \((n = 82)\). The Canonical correlation analysis revealed that parental attachment was significantly related to career maturity, Pillai’s \(V = .12, F (4, 158) = 2.42, p < .05\). On the other hand, psychological separation from parents was not significantly related to career maturity, Pillai’s \(V = .25, F (16, 146) = 1.32, p < .19\). They stated that students who were emotionally attached to their parents tended to engage in career planning and exploration activities. No gender differences were found, but the researchers interpreted this as being due to the small sample size.

Another relevant study was conducted by Lopez (1989) who investigated the influence of family dynamics on college students’ vocational identity development \((n = 199)\). Their family-related measures included conflictual independence and emotional independence from the mother and father as well as marital conflict. Conflictual independence means the degree of children’s “freedom from excessive guilt, resentment, and anger in the relationships with parents” (p. 80). Emotional independence means the degree of “freedom from excessive needs of parental approval, closeness, and emotional support” (p. 80). Multiple regression analysis revealed that these measures consisted of 13 and 14 percent of the variances for males and females respectively in
predicting students’ MVS vocational identity scores. Conflictual independence from the opposite sex parent was the most powerful predictor of the vocational identity score (male $\beta = .30, p < .01$; female $\beta = .36, p < .001$). The researchers interpreted this as meaning that conflict with parents may hinder the healthy development of a child’s vocational identity. Additionally, marital conflict appeared to affect a boy’s vocational identity development, but not a girl’s. Emotional independence was not found to have a significant effect on vocational identity for either sex.

Lopez (1989) also investigated students’ academic adjustment as a predictor variable for vocational identity. He found that it accounted for eight percent of the variance for males and nineteen percent for females in predicting the MVS vocational identity score ($p < .001$).

To summarize, the development of vocational identity is interrelated with various aspects of adolescents’ lives. Developing vocational identity is not just a peripheral task for adolescents to accomplish, but actually the central task for them. It affects overall mental health, the development of overall identity, and academic adjustment. Helping adolescents to establish a healthier vocational identity is one of the central goals of school counselors’ practice in the U.S. (Council for Accreditation of Counseling and Related Educational Programs, 2001). However, such efforts have been neglected in the Japanese school system (National Institute for Educational Policy Research of Japan, 2002). In the next section, the newly developed framework for helping adolescents’ vocational identity in the Japanese school system is presented after the reviews of the widely accepted American counterpart.
Career Development Frameworks in American and Japanese School Systems

In order for adolescents to develop a crystallized vocational identity, counselors and educators have developed the framework to implement systematic career counseling and education in schools. This section discusses the career counseling frameworks present in the U.S. and Japan.

Following the preliminary development of career goals and competencies in elementary and middle school, the high school years are used to refine one’s career aspirations (Sciarra, 2004; Zunker, 2002). Paisley and Hubbard (1994) developed a framework of skills and tasks that a student would need to acquire or accomplish during the elementary to high school years in order to successfully prepare to enter the workforce, which ultimately helps them to develop a clear vocational identity. According to Paisley and Hubbard (1994), high school students in particular are expected to understand their abilities, skills, aptitudes, and interests in order to narrow down their career choices. More precisely, they discussed that the overall career goals for high school students are to: (a) become aware of personal characteristics, interests, aptitudes, and skills; (b) develop an awareness of and respect of the diversity of the world of work; (c) understand the relationship between school performance and future choices; and (d) develop a positive attitude toward work.

In addition, Paisley and Hubbard outlined grade-specific competencies for high school students as follows.

Ninth-grade students will be able to: (a) recognize positive work habits; (b) refine their knowledge of their own skills, aptitudes, interests, and values; (c)
identify general career goals; (d) make class selections on the basis of career 
goals; and (e) use career resources in goal setting and decision making.

Tenth-grade students will be able to: (a) clarify the role of personal values in 
career choice; (b) distinguish educational and skill requirements for areas or 
careers or interest; (c) recognize the effects of job or career choice on other areas 
of life; (d) begin realistic assessment of their potential in various fields; and (e) 
develop skills in prioritizing needs related to career planning. Eleventh-grade 
students will be able to: (a) refine future career goals through synthesis of 
information concerning self, use of resources, and consultation with others; (b) 
coordinate class selection with career goals; (c) identify specific educational 
requirements necessary to achieve their goals; and (d) clarify their own values as 
they relate to work and leisure. Twelfth-grade students will be able to: (a) 
complete requirements for transition from high school; (b) make final 
commitments to career plan; (c) understand the potential for change in their own 
interests or values related to work; (d) understand the potential for change within 
the job market; (e) understand career development as a life-long process; and (f) 
accept responsibility for their own career directions (pp. 218-221).

Thus, as Zunker (2002) interpreted, high school students are expected to be more 
responsible for their career choices and to take more independent actions. As such, the 
high school years are a very important time in a student’s life to prepare and plan for the 
school-to-work transition. This period is critical especially for Japanese students.
Japanese high school students are pressured to make career and academic decisions earlier than their American counterparts due to the different college entrance examination systems as previously mentioned in chapter one. It is even more critical for Japanese students to develop a clear and crystallized vocational identity at the high school level. For this reason, the development of a systematic career counseling system has gathered public attention.

The National Institute for Educational Policy Research of Japan (NIER; 2002) developed a framework for cultivating Japanese high school students’ career development. It defined the high school years as a period of realistic exploration and trial as well as the preparation for social transition. Issues that students need to address include:

1. self-acceptance and deeper self-understanding;
2. establishment of the career perspectives as their selection criterion;
3. making a future plan and preparation for social transition;
4. careful selection of career options and trial participation.

Furthermore, it suggested that there are abilities and attitudes that need to be developed during this period. They organized their findings into four domains: the ability to develop human relationships, utilize information, plan for the future, and make decisions.

First, the ability to develop human relationship is to:

- understand, accept, and cultivate one’s abilities and aptitudes;
- communicate appropriately with wide range of people, such as different generations and gender, and in various situations;
- play leader and/or follower roles, bring out others’ abilities, and enhance teamwork.

Second, the ability to utilize information is to:

- gather multifaceted occupational information and a trend of an industry, and
consider them from various points of view; (b) know the rights, obligation, and responsibilities in one’s occupational life, and understand the process to enter an occupation; (c) obtain trial work experience and/or educational experience in an institution of higher education; and (d) obtaining a deeper understanding of one’s own career perspective by considering various work values. Third, the ability to plan for the future is to; (a) in terms of academic as well as other activities, understand what he/she should work on now based on his/her future life plan; (b) consider realistically how he/she can live his/her life purposefully; (c) thoroughly understand one’s chosen occupation and develop an educational and career plan; and (d) reexamine one’s career plan, and work on its realization.

Last, the ability to make decisions is to: (a) have own work values as the criteria for her/his occupational choice; (b) select one’s career and educational path from various options with his/her own will and responsibilities; (c) consider the possibilities of entering his/her desired occupation with understanding of its requirements; (d) accept one’s own decision, and take responsibility for it; and (e) develop goals for realizing one’s desired future plan, and work on achieving these goals (pp.47-48).

Although the Japanese employment practices in businesses still encompass both the occupational model and workplace/company model as discussed in chapter one and the first section of this chapter, it seems that Japanese career education intends to implement a system similar to the U.S. The frameworks in both countries similarly indicate that self-understanding, such as a clarification of one’s interests, abilities,
aptitude, and work values, is important. These in-depth self-understandings help to form selection criteria for one’s future occupation. The Japanese framework places more importance on cultivating individual characteristics to help high school students make better career choices. Clearly it is not focusing on educating students to become employees who have higher levels of general education enabling them to quickly acquire new job skills and knowledge, or who are dedicated to work for their companies/organizations and willing to take various job duties as assigned by their employers. It is important to note that this is dying the “white textile” before their future employees decide which color they want to dye the textile.

**Holland’s Typology Approach**

A career counseling intervention based on Holland’s (1997) theory is one of the useful approaches to help adolescents develop clear vocational identities and decide their future occupation. This section discusses the applicability of his theory to Japanese culture including an overview of Holland’s typology approach, the review of the construct validity of his theory in the U.S. and Japan, and the empirical findings on his theory as a career counseling intervention.

*Overview of Holland’s Typology Approach*

Holland’s (1997) typology approach is one of the most widely recognized and studied career theories among practitioners and researchers. This approach can be considered as an exemplary occupational choice model before entering the labor market. He conceptualized vocational choice as an expression and an extension of one’s personality in the world of work. He discussed that most persons can be classified into
one of six personality types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), or Conventional (C): hereafter, the types will be referred to as RIASEC. Work environments can be categorized into one of the six model environments (RIASEC). He explained that people seek a work environment congruent with their personality types so that they can use their skills and abilities, express their attitude and values, and take on preferable work roles. For example, people who score high on the Social scale tend to seek a Social work environment. Similarly, employers tend to seek, through recruitment and recommendations, people who match their work environments. As a result, people in a particular occupation tend to possess similar personalities and interests. The congruence between one’s personality and work environment is expected to create positive outcomes, such as job satisfaction, adjustment, stability, and achievement. The academic environment is also created in the same manner by the interaction between faculty members and students (Smart & Umbach, 2007). Faculty members in a particular discipline share similar personalities and interests, and tend to organize academic courses in a similar manner, which result in attracting the same type of students.

Holland (1997) described each of the six model personality types as follows:

The *Realistic* type tends to prefer activities which involve “the explicit, ordered, or systematic manipulation of objects, tools, machines, and animals” (p. 21). They are characterized as conforming, materialistic, realistic, dogmatic, natural, reserved, genuine, normal, robust, hardheaded, persistent, self-effacing, inflexible, practical, and lacking insight.
The *Investigative* type enjoys activities which entail “the observational, symbolic, systematic, and creative investigation of physical, biological, and cultural phenomena (in order to understand and control such phenomena)” (p. 22). They can be described as analytical, independent, radical, cautious, intellectual, rational, complex, introspective, reserved, critical, pessimistic, retiring, curious, precise, and unassuming.

The *Artistic* type has a tendency to like “ambiguous, free, unsystematized activities that entail the manipulation of physical, verbal, or human materials to create art forms or products” (p. 23). They are apt to be complicated, imaginative, intuitive, disorderly, impractical, nonconforming, emotional, impulsive, open, expressive, independent, original, idealistic, introspective, and sensitive.

The *Social* type typically engages in activities that involve “the manipulation of others to inform, train, develop, cure, or enlighten” (p. 24). They are characterized as agreeable, helpful, responsible, cooperative, idealistic, sociable, empathic, kind, tactful, friendly, patient, understanding, generous, persuasive, and warm.

The *Enterprising* type tends to prefer activities related to “the manipulation of others to attain organizational goals or economic gain” (p. 25). They are apt to be acquisitive, energetic, forceful, adventurous, enthusiastic, optimistic, ambitious, excitement-seeking, resourceful, assertive, exhibitionistic, self-confident, domineering, extroverted, and sociable.

The *Conventional* type likely enjoys activities that involve “the explicit, ordered, systematic manipulation of data (e.g., keeping records, filing materials, reproducing materials, organizing business machines and data processing equipment to attain
organizational or economic goals)” (pp. 26-27). They can be characterized as careful, inflexible, persistent, conforming, inhibited, practical, conscientious, methodical, thorough, dogmatic, obedient, thrifty, efficient, orderly, and unimaginative.

Holland (1997) conceptualized these personal characteristics as developing throughout one’s life. From the time a child is born he or she possesses some biological predispositions for certain personality characteristics. By enacting those inherited components through an individual’s preferred activities, he/she receives reinforcement from his/her environments including from home, school, and friends. This leads to the development of long-term interests and competencies and eventually becomes a part of his/her personality or behavioral repertoire.

In addition to the six personality characteristics, Holland (1997) also described six environments which he also classified into the RIASEC model. Each environment implies that the majority of the people present have the personality traits that coincide with the environment. For example, the Realistic environment is primarily composed of Realistic types and so forth. These environments are characterized as follows:

The Realistic environment has people with the Realistic personality type as the majority and is dominated by demands and opportunities that involve “the explicit, ordered, or systematic manipulation of objects, tools, machines, and animals” (p. 43). The Realistic environment reinforces activities such as using machines and tools, fosters technical and mechanical competencies and achievements, and encourages people to have simple, tangible, and traditional perspectives.
The Investigative environment has people with the Investigative personality type as a majority and mainly provides opportunities that involve “the observation and symbolic, systematic, creative investigation of physical, biological, or cultural phenomena” (p. 44). The Investigative environment reinforces investigative activities and fosters scientific competencies and achievements.

The Artistic environment has people with the Artistic personality type as the majority and creates work demands that involve “the ambiguous, free, unsystematized activities and competencies to create art forms or products” (p. 45). People in this environment are reinforced for engaging in artistic activities and tend to be “expressive, original, intuitive, nonconforming, and independent” (p. 45).

The Social environment has people with the Social personality type as the majority and provides opportunities that are related to “the manipulation of others to inform, train, develop, cure, or enlighten” (p. 46) in social settings. This environment encourages people to develop social competencies, to understand and help others, and to be cooperative and sociable.

The Enterprising environment has people with the Enterprising personality type as the majority and provides work opportunities that entails “the manipulation of others to attain organizational or self-interest goals” (p. 46). The atmosphere of this work environment encourages people to work on enterprising activities, such as selling or leading others, to develop enterprising competencies and achievements, and to be aggressive, popular, self-confident, and sociable.
The *Conventional* environment has people with the Conventional personality types as the majority and creates work demands that involve “the explicit, ordered, systematic manipulation of data such as keeping records, filing materials, reproducing materials, organizing written and numerical data according to a prescribed plan, operating business and data processing equipment” (p. 47). This environment encourages people to be conforming, orderly, and non-artistic and to possess clerical competencies.

Holland (1997) conceptualized these six personality and environmental types as being placed on a hexagonal model (Figure 1). There are three levels of closeness for the pairs of RIASEC types depending on their position on the hexagon. Any two types placed next to one another, for example Social and Enterprising, have similarities. On the other hand, any two types placed opposite one another, such as Artistic and Conventional, have few similarities. The types placed on every other position, for example Social and Investigative, possess an intermediate level of similarities. The validity of this hexagonal construct is supported by empirical findings in the U.S. and partially supported outside of the U.S. (e.g.; Conneran & Hartman, 1993; Fouad & Mohler, 2004; Holland, 1997; Long, Adams, & Tracey, 2005) including Japan (Long, Watanabe, & Tracey, 2006; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2002; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2007; Tracey, Watanabe, & Schneider, 1997).
Figure 1: Hexagonal Model.

(Holland, 1997)
In addition to conceptualizing the RIASEC model for work personalities and environments, Holland (1997) also proposed several secondary assumptions used to moderate or qualify the prediction of the outcomes resulting from the RIASEC person-environment fit. These secondary assumptions are consistency, differentiation, identity, congruence, and calculus. Consistency refers to “the degree of relatedness between personality types or between environmental models” (p. 4). A person, who has a closely related personality type, in terms of his/her positions on the hexagon, should have a more predictable vocational preference. Differentiation means “the degree to which a person or an environment is well-defined” (p. 4). A differentiated person or environment possesses one clear preference on the hexagon, whereas an undifferentiated person or environment possesses several equally preferable interests. Identity reflects “an estimate of the clarity and stability of a person’s identity or the identity of an environment” (p. 5). A strong personal or environmental identity is associated with a clear and stable image of one’s goals, interests, and talents. Congruence is defined as the degree of similarity between personality types and the environment. For example, Social types flourish in Social environments because the available opportunities and rewards are consistent with their preference. Conversely, Incongruence occurs if the personality type and environment type differ significantly and the opportunities and the rewards that one wishes are not provided in such an environment. Calculus means the levels of correlation indicated by the distance between each RIASEC type on the hexagon. Holland argued that these assumptions are important in interpreting personal or environmental characteristics.
Empirical Findings on the Construct Validity of Holland’s Theory

Many researchers have investigated the construct validity of Holland’s RIASEC theory (e.g., Holland, Powell, & Fritzche, 1994; Osipow & Fitzgerald, 1996; Osipow & Fitzgerald, 1996; Rounds & Tracey, 1996; Spokane, 1996; Uffelman, Subich, Diegelman, Wagner, and Bardash, 2004). The number of those studies, however, is “extremely large and almost overwhelming” (Zunker, 2002, p. 63). For this reason, a brief summary of the studies most widely cited is provided. Then, empirical studies on the construct validity of Holland’s theory in and outside of the U.S. are discussed, with the primary focus on Japan.

The majority of the investigations which tested Holland’s theory used the Self-Directed Search (SDS; Holland, Fritzshe, & Powell, 1994), the Vocational Preference Inventory (VPI; Holland, 1985) or the Strong Interest Inventory (SII; Harmon, Hansen, Borgen, & Hammer, 1994; the previous version is called the Strong-Campbell Interest Inventory; SCII) in order to assess participants’ RIASEC profile. Other inventories also based on Holland’s RIASEC model include the Career Decision-Making Interest Survey (Harrington & O’Shea, 1993) and the Career Assessment Inventory (Johansson, 1986). The American College Testing Program (1988) also has been scaled to assess the RIASEC types. These inventories have been used by researchers and have been included in the meta-analysis which tested the validity of the RIASEC theory (Rounds & Tracey, 1996).

Extensive reviews of Holland’s theory have been reported by Holland (1997), Spokane (1996), Osipow and Fitzgerald (1996), Holland, Fritzshe, and Powell (1994),
Holland, Powell, and Fritzche (1994), and Weinrach and Srebalus (1990). The results of those studies consistently supported the validity of the RIASEC theory. In particular, the hexagonal model has obtained strong support from numerous studies (e.g., Holland, 1997; Holland, Fritzsche, & Powell, 1994; Holland, Powell, & Fritzche, 1994; Osipow & Fitzgerald, 1996; Spokane, 1996; Osipow & Fitzgerald, 1996; Weinrach & Srebalus, 1990), although the findings on the secondary assumptions (Conneran & Hartman, 1993) and the application of the theory to other cultures (Tinsley, 1992) remain somewhat unclear.

Tracey and Rounds (1993) conducted a meta-analysis in order to evaluate Holland’s (1997) hexagonal model. More specifically, their research tested the criticism by Gati (1991) against Holland’s hexagonal model. Gati proposed that vocational interests were well represented by a three pairs rather than a circular hexagon. He hypothesized that a three-single partition (i.e., R with I, A with S, and E with C) has a greater correlation than any other pair (RA, RS, RE, RC, IA, IS, IE, IC, AE, AC, SE, SC). Tracey and Rounds (1993) evaluated 104 correlation matrices and concluded that the Holland’s hexagonal model was superior to Gati’s (1991) model.

Rounds & Tracey (1996) also conducted a similar meta-analysis to compare the hexagonal model to Gati’s (1991) three partition model with 76 international matrices from 18 countries. In order to determine the degree of fit to the proposed model, researchers calculated the Correspondence Index (CI). The authors defined the CI as “a correlation reflecting the number of predictions met (number of predictions met – number of predictions violated / all divided by the total number of predictions)” (Tracey, 2007, p.
Possible scores range from -1 to 1. A negative score means that there are more pairs that do not fit the predicted model than there are pairs that fit the predicted model. A score of zero indicates the patterns are random and have a poor fit for the proposed model. A higher score (e.g., greater than .05) means a greater fit to the proposed model.

Contrary to the findings in the previous study with U.S. samples (Tracey & Rounds, 1993), the matrices from most of the other countries, except Iceland, indicated that Gati’s three partition model was superior to Holland’s hexagonal model (Rounds & Tracey, 1996). This was also true for the different ethnic groups in the U.S. Rounds and Tracey reported that the hexagon may not be superior to Gati’s model for other countries and that further research is needed. However, the CI scores for the hexagonal model for most of the countries were greater than .05, which indicates a good fit. Japan was one of the few countries which had a similar CI score to the U.S. The CI scores for both Japan and the U.S. were close to .07 and within a 99% confidence interval.

Fouad and Mohler (2004) investigated the cultural validity of the hexagonal model with U.S. racial and ethnic groups by using the SII and found better results which supported the hexagonal model. Their research also calculated the CI scores obtained from the SII administration to five ethnic groups (n = 750 for each group). The CI scores ranged from .57 (p = .02) for Native American men to .94 (p = .02) for Asian American women and the overall mean was .77. The CI score for Asian American men was .81 (p = .02). This result indicated that Holland’s hexagonal structure has an excellent fit to U.S. ethnic groups and could be generalized to the populations represented by the samples.
The relatively lower evaluation of the hexagonal model reported by Rounds and Tracey’s (1996) meta-analysis could be because of the fluctuation of the measurements they included in the analysis. Fouad and Mohler’s study (2004) only used the original SII, which is a well-validated measurement, whereas Rounds and Tracey’s meta-analysis included the matrices obtained from various measurements ranging from the well-validated original measurements such as the SII and the VPI to the utilization of methods which converted interest scale scores to RIASEC types. Tracey, Watanabe, and Schneider (1997) also discussed that the SII had a better fit in many different cultures than other RIASEC measurements.

Thus, although some researchers claim that better models exist to survey interests, in general the validity of the RIASEC hexagonal model with U.S. samples is well supported. However, the research findings indicate that the application of the RIASEC model with Japanese samples remains somewhat equivocal.

The Japanese version of the Vocational Preference Inventory (VPI) manual (Roudo-Seisaku-Kenkyu-Kenshu-Kikou, 2002) reported the correlation matrices of six interest types (n = 1,438 males, and n = 1,650 females). Although the manual does not discuss the structural validity of the hexagonal model with Japanese samples, the matrices indicate several differences from the hypothesis that the Holland theory proposes (Holland, 1997). For example, regarding the calculus assumption, the order of the hexagon for Japanese males appeared to have the A (Artistic) and the S (Social) in alternate order (RISAEC instead of RIASEC). Females also had minor differences in the orders of the correlation. The manual, however, does not provide the Correspondence
Index (CI) nor statistical analyses regarding the hexagonal structure, therefore the degrees of fit to the proposed model were unclear. According to Tracy, Watanabe, and Schneider (1997), the previous version of the Japanese VPI had a CI score of .65 for males and .72 for females, which indicated a good fit.

The manual for the Vocational Readiness Test (VRT; Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2007) also reported the internal correlation matrix of the RIASEC types (n = 28,070). The VRT was specifically developed for Japanese high school students and listed vocational activities rather than occupational titles as the VPI does. The VRT matrix also appeared to have many differences between the hexagonal structure and the actual findings. For example, in one of the subscales of this test, the first and the second highest correlations for I were R and C rather than R and A; for A, S and E instead of S and I; for S, E and C, not E and A; and for C, S and E rather than R and E (p < .01). The other subscale also appeared to differ from the RIASEC hexagonal structure. The manual, however, did not provide the CI scores, and therefore the degree of fit to the original hexagonal model remains unclear.

In order to investigate the structural generalizability of the hexagonal model, Tracey, Watanabe, and Schneider (1997) compared the degree of similarity of this model with U.S. and Japanese samples (n = 373 Japanese; n = 401 Americans). The researchers used the VPI to test the hexagonal model and another instrument to test their own model. They found that both the U.S. and Japanese samples significantly fit the hexagonal model with the CI scores of .92 and .69, respectively. Although the Japanese samples fit the model, a statistical analysis revealed that the difference between the scores was
significant, indicating that the U.S. sample had a better fit to the hexagonal model than the Japanese sample. Additionally, although there were no significant differences between males and females in the U.S. sample, the Japanese sample revealed significant differences between males and females with CI scores of .47 and .75, respectively. The researcher stated that the reasons for the differences were unclear but the translation of the occupational titles, which contain culturally sensitive terms, might have contributed to the differences. Additionally, the researchers only used a short version of the VPI. The shortening of the original version might have caused a lower level of fit to the model.

Long, Watanabe, and Tracey (2006) conducted a study with 2,492 Japanese participants. The researchers developed a measurement called the Personal Globe Inventory (PGI) based on their previous investigations. The researchers increased the specificity of the interest types and proposed an octant model which assesses eight interest types: helping, artistic, nature/outdoors, mechanical, data processing, business detail, managing, and social facilitating. The PGI can also assess the RIASEC types. The researchers reported that the PGI-RIASEC subscale was highly correlated with the Strong Interest Inventory and that the hexagon was supported by both high school and college samples in the U.S. They also found that for the Japanese sample the PGI-RIASEC structure fit the hexagonal model with CI scores of .72 for the total sample, .81 for the males, and .67 for the females ($p < .02$). There were no significant differences based on gender. Additionally, their findings also supported their proposed spherical model.

The significant outcomes reported by Tracey and Rounds (1993) and Long, Watanabe, and Tracey (2006) showed that the RIASEC hexagon had a good fit with
Japanese samples, although the findings also indicated that the structural validity of the hexagonal model was sensitive to the instruments used in the investigations. In order to further understand the applicability of Holland’s theory to the Japanese culture, it is important to replicate the research with different Japanese samples, translate the various RIASEC instruments, and develop instruments specific to Japanese people.

In addition to the ambiguity about the cultural invariance of Holland’s (1997) theory, there are other equivocal findings about his theory. Regarding the secondary assumptions, for example, Conneran and Hartman (1993) studied the relationship between career indecision and Holland’s (1997) concepts of congruence, differentiation, consistency, and coherence (identity) among vocational high school students (n = 126; 78 boys, 48 girls). They found that students who were chronically career-undecided had significantly lower levels of congruence for both genders compared to career-decided students, *t* (69) = 3.23, *p* < .01 for boys, *t* (39) = 6.39, *p* < .01 for girls. The finding suggested that a student in an educational environment that does not fit the personality type will most likely struggle in career decision making. They also found that undecided boys had significantly lower scores on differentiation, *t* (69) = 2.60, *p* < .01, than decided boys, but girls did not have significant differences. These results indicated two things. First, boys who had not developed clear and specific interest areas were not ready to make a career choice. Second, the differentiation assumption may not be invariant across genders. The scores on consistency and coherence did not differ significantly between decided and undecided students. Further examination is needed to test the secondary assumptions.
Holland’s (1997) theory has been criticized as being gender-biased (Zunker, 2002). This criticism purports that the RIASEC interest inventories limit career options for women and that women tend to obtain higher scores on the Artistic, Social, and Conventional scales. Holland defended his theory by stating that the sexist society was the environment that reinforced those outcomes.

Overall, the RIASEC theory is well supported empirically in the U.S. Although the applicability of this theory to other countries remains somewhat ambiguous, Japan is one of the few countries which had a close level of theoretical fit other than the U.S. Further research with well-refined instruments may improve the construct validity of the RIASEC theory in Japan.

*Empirical Findings on Holland’s Theory as a Career Intervention*

Career counseling interventions which use Holland’s (1997) theory have been widely studied and research has provided empirical evidence of the theory’s usefulness (e.g.; Dziuban, Tango, & Hynes, 1994; Hoffman, Spokane, & Magoon, 1981; Johnson, Smither, & Holland, 1981; Luzzo & Day, 1999; Randahl, Hansen, & Haverkamp, 1993; Slaney, 1983; Uffelman, Subich, Diegelman, Wagner, & Bardach, 2004). The utilization of Holland’s theory in counseling is generally characterized as providing interest inventories such as the Strong Interest Inventory (SII) and the Self-Directed Search (SDS). Counselors use those interest inventories and provide Holland’s RIASEC codes to their clients and encourage them to explore their career options based on their codes.

Some research has included Holland’s RIASEC interest inventory as a part of the entire career counseling program (e.g., Barnes & Herr, 1998; Mau, 1999; Rayman, Bernard,
Holland, & Barnett, 1983), and, therefore, it is unable to discriminate the effect of the RIASEC interest inventory from other variables, for example, taking a personal value inventory, learning about the process of decision-making, and/or job-shadowing. For the purpose of the present study which investigates the effectiveness of a career intervention based on Holland’s RIASEC theory, the reviews of this section focus on the studies which tested the effects of taking the RIASEC inventory as an independent variable.

Hoffman, Spokane, and Magoon (1981) investigated the effect of counselors’ feedback mode based on the Strong-Campbell Interest Inventory (SCII) \((n = 33\) college students). There were three types of treatments: no-counselor-contact (SCII profile only), quasi-contact (SCII profile and audiotape), or direct-counselor-contact (SCII profile and 30-minute counseling interview). The information provided in the audiotape and the counseling interview was identical and extracted from the back of the SCII profile. No other information and individualized interpretations were provided in any treatment groups. The researchers found significant treatment differences on the return rate of the Occupational Information Order Form. The participants in the direct-counselor-contact group requested more occupational information than other groups. The direct-contact group also scored higher on the Goal Attainment Scales which assesses the level of a career related goal attainment. Other outcome measures included the vocational identity, occupational information-seeking behavior, and the number of alternatives of one’s future career. None of these measures demonstrated significant treatment differences.

Hoffman et al.’s (1981) statistically significant outcomes on two outcome measures supported the superiority of a counselor’s direct contact to some extent. The
finding of no significant treatment differences on other outcome measures might have been because no individualized counseling session was provided even in the direct-counselor-contact group. Since there was no control group in this experiment, the effectiveness of providing the SCII profile itself compared to a no-treatment group is unclear.

Johnson et al. (1981) studied the students’ evaluations of the various vocational interventions provided in a career development seminar for college students \( (n = 29) \). These vocational intervention activities included talking to employed people about their jobs and careers, using the Dictionary of Occupational Titles (U.S. Department of Labor, 1991), taking the SDS and going over the results, filling out the Occupational Alternative Fact Sheet, talking to a faculty member about the student’s vocational goals or major field, and ranking of life goals and personal traits. According to the authors, there were approximately 15 activities evaluated by the students, but not all of the activities were reported in the literature. Students rated each activity on a five-point scale \( (5 = \text{very helpful}; 3 = \text{uncertain}; \text{and} \ 1 = \text{confusing or even harmful}) \). The most helpful activity was talking to employed people about their jobs and careers; using the Dictionary of Occupational Titles was rated as the second. Taking the SDS and going over the results was the third most helpful activity in the career development seminar.

Johnson et al.’s (1981) study provides an insight into how the students perceive the RIASEC interest inventories and learning about how to search for occupational information, which is also the focus of the present study. Although the perceived usefulness of those activities was reported in Johnson et al.’s study, how those activities
can help a student to develop a clear vocational identity or to narrow down his/her career choices are unclear.

Slaney (1983) also tested the treatment effects of the SCII feedback compared to the Vocational Card Sort and no treatment (n = 180 female college students). They found that the SCII had the highest treatment satisfaction compared to the other two groups. The group who took the SCII also showed a greater change in career choice after the treatment. Those who did not have a clear vocational goal showed the most benefit by taking the SCII. The findings of this research indicate that taking the SCII helped participants to make the reasonable career choices.

The research discussed above consistently supported the positive effects of taking RIASEC interest inventories as measured by the perceived helpfulness (Johnson et al., 1981), the treatment satisfaction, and making the reasonable career choices (Slaney, 1983). Empirical studies on the career interventions based on this theory in the 1990s continued to show its usefulness.

Randahl, Hansen, and Haverkamp (1993) studied the exploration validity of the Strong Interest Inventory (SII: n = 157 college students). Exploration validity is defined as “the power of interest inventories to facilitate career exploration activities such as talking to professionals and seeking vocational information” (p. 435). A multivariate analysis of variance revealed that the treatment group which received the SII administration, profile, and feedback performed more activities in reading about and discussing one’s desired occupation, $F = 27.8, p < .001$, effect size $d = .80$. The treatment group also had more activities in information seeking at the time of the one year
follow-up than the control group, $F = 30.02, p < .001, d = 1.35$. These two results indicated that participants who received the SII profile and feedback became more active in their career exploration activity. On the other hand, the treatment group was less active than the control group in obtaining vocational testing by the one year follow-up, $F = 8.26, p = .005, d = -.35$ (Randahl, Hansen, & Haverkamp, 1993). The researchers stated that the SII feedback and interpretation at the time of the treatment was informative enough that the participants stopped taking additional assessments in the following one year.

Dziuban, Tango, and Hynes (1994) studied the effect of the SII on college students’ career decisiveness ($n = 79$). The researchers assessed whether students changed or solidified their decision status after taking the SII. They found that after taking the test and reflecting on the results, students solidified their decidedness more than the control group. The inventory also changed their status of decidedness from decided to undecided. The researchers interpreted this as meaning that the students who had the tentative vocational goals without deeper self-understanding were affected by the interest inventory because they had the opportunity to reflect on their uncomfortable connection between their personality and their tentative career choice.

Luzzo and Day (1999) investigated the effects of using the Strong Interest Inventory (SII) on career decision-making self-efficacy and social cognitive career beliefs ($n = 99$ college students). Their experimental condition had three levels: SII with a self-efficacy enhancing group feedback and interpretation session, taking the SII only, and a control group. An analysis of covariance (ANCOVA) with pretest scores as a covariate revealed a statistically significant difference in post-test scores for the
self-efficacy scale, $F(2, 95) = 8.54, p < .01$. Tukey post hoc analysis found that the SII with the feedback group showed a significant difference from the SII only group with a medium effect size, $d = 0.49$ and from the control group with a medium effect size, $d = 0.64$ (Cohen, 1992).

They also studied the effects of the three levels of their experimental condition on three career beliefs: responsibility, working hard, and control measured (Luzzo & Day, 1999). Those career beliefs were measured by the Career Beliefs Inventory (CBI; Krumboltz, 1991). An ANCOVA revealed a statistically significant difference on the scores for responsibility and working hard, but not for the score of control (A Bonferroni correction was used to control for inflated Type I error: alpha = .05/3 = .016). A Tukey post hoc test indicated both the SII with feedback group and the SII only group had a significant increase from pre-test to post-test CBI scores for responsibility and working hard. The researchers interpreted this as meaning that not only completing the SII as well as the participation of feedback group but also only taking the inventory (i.e., SII only) had a positive impact on students. As a result the students began to take more responsibility for their career development and to be motivated to work hard.

Uffelman, et al., (2004) studied the effects of two interest assessments, the SII and the SDS, on career decision-making self-efficacy. Eighty-one career-undecided college students either took the SII, the SDS with a standard procedure, or the SDS with a process-oriented procedure as experimental groups, or took no assessment as a control group. All three experimental groups also received career counseling based on the assessment results. Paired $t$ tests indicated a statistically significant increase from pre-test
self-efficacy scores to post-test scores for all three experimental groups; the SII 
\( t = 3.29, p < .01 \), the SDS standard \( t = 9.50, p < .001 \), and the SDS process 
\( t = 5.45, p < .01 \). On the other hand the control group did not show a statistically 
significant difference between pre- and post-test scores \( t = 1.64, p > .05 \). Effect sizes 
were medium-large to large; the SDS standard \( d = .84 \), the SDS process \( d = .68 \), and 
the SII \( d = .41 \) (Cohen, 1992). However no differences were found between the three 
experimental groups.

These positive effects of interest inventories on self-efficacy were consistent 
with the research by Luzzo and Day (1999) discussed above. The findings suggested that 
interest inventories based on Holland’s theory (1997) were a useful tool to change 
adolescents’ attitudes toward their career development, which leads to more advanced 
vocational identity status. Despite the positive findings regarding the career interventions 
based on the RIASEC interest inventories with the U.S. samples, searches in the social 
science data bases including Academic Search Complete, Academic Search Premier, 
Electronic Journals Index, Google Scholar, ERIC, and PsycINFO revealed virtually no 
research with Japanese samples on this topic. Considering that the validity of this theory 
with the Japanese population has gained support as discussed earlier, it is time to shift the 
focus of investigation to testing the effectiveness of this theory as a career counseling 
approach with Japanese samples.

The Use of the Internet for Occupational Information Search

The treatment condition of the present study involves taking Holland’s (1997) 
interest inventory and searching occupational information on the internet based on the
results of the assessment. This section discusses the relevant literature regarding the use of the internet for occupational information search.

Searching occupational information is one of the most important components of the career decision-making process for adolescents and adults (Brown, Krane, Brecheisen, Astelino, Budisin, Miller, & Edens, 2003). Computers have been identified as a widely used means to gather occupational information (McCarthy, Moller, & Beard, 2003). Researchers have investigated the effects of Computer-Assisted Career Guidance (CACG) systems which also include an occupational information search, and have reported positive outcomes (e.g., Gati, Gadassi, & Shemesh, 2006; Gati, Kleiman, Saka, & Zakai, 2003; Kim & Kim, 2001; Mau, 1997). The CACG systems used in those outcome studies are interactive guidance systems which provide assessment tools to identify user’s values, interests, skills, and/or experiences. They also provide assessment results and access to occupational information (Robinson, Meyer, Prince, McLean, & Low, 2000). Thus, they are comprehensive career guidance activities.

The present study, however, utilized the internet only to search occupational information. The interest inventory and its result are provided by the printed materials. Therefore, the literature review of this section mainly focuses on articles discussing the use of the internet for an occupational information search. Only a few studies investigated using the internet exclusively for this purpose.

One such study was conducted by McCarthy, Moller, and Beard (2003). These researchers developed a web page containing a link to useful career resources on the internet including O*Net, which was developed by the U.S. Department of Labor. They
trained 14 master’s level counseling students to become familiar with each linked web site. Each of the counseling students was then assigned to two volunteer undergraduate students who were looking for occupational information. Counseling students met with undergraduates twice for 30 minutes each time and helped them look for career information. On a Likert scale ranging from 0 = strongly disagree to 5 = strongly agree, the undergraduate students \( n = 20 \) rated seven items. The mean scores of each item were: (1) Can see value of internet career counseling, 4.42 \( (SD = 0.96) \); (2) Found internet useful, 4.21 \( (SD = 1.07) \); (3) Found web site used relevant, 4.32 \( (SD = 1.27) \); (4) Thought web sites had quality information, 4.21 \( (SD = 1.29) \); (5) Thought web sites were interesting, 4.30 \( (SD = 0.98) \); (6) Learned new information, 4.21 \( (SD = 1.20) \); and (7) Would use internet again for this purpose, 4.25 \( (SD = 1.12) \).

The results indicated positive attitudes of undergraduate students toward using the internet for occupational information search (McCarthey et al, 2003). However, this research did not assess the help given by the counseling students as a variable which may have influenced the perceived usefulness of using the internet. Therefore, the effect of the counselor’s help as a variable remains unknown.

Maze (2002) investigated the usefulness of characteristics types included in occupational selection. The types of characteristics included the seven domains on the O*Net web page: Knowledge Requirements, Skills, Abilities, Generalized Work Activities, Work Context, Interests, and Values. The Interest domain is built based on Holland’s (1997) RIASEC theory. Community college students \( n = 229 \) were asked to indicate their preference for these domains on a five-point scale. The researcher found
that the participants felt six domains, excluding the values domain, to be useful for their career selection. The order of their preferences were: Knowledge Requirements, Generalized Work Activities, Skills, Work Context, Interests, and Abilities.

Fowkes and McWhirter (2007) criticized past research on computer-based career interventions as having less focus on career-related gains and more focus on user satisfaction. The two studies discussed above did not assess career related-gains, such as the increase of vocational identity or the progress of career decision making. In this sense the actual value of the career information search on the internet still needs further investigation. However, the results seem to indicate there are perceived benefits for participants.

Although there are few studies available on utilizing the internet for an occupational information search (Fowkes & McWhirter, 2007), in the age of information technology the abilities to utilize the internet are necessary skills for both clients and counselors (Rile & Harris-Bowlsbey, 2000). Zalaquett and Osborn (2007) encourage counselors to integrate the use of the internet in career counseling so that the client can make informed decisions.

McCarthy, Moller, and Beard (2003), however, pointed out a few cautions. The volume of occupational information on the internet is overwhelmingly large and not necessarily organized. Therefore, clients need to be guided by the counselors who may analyze what types of resources they are looking for. The types of occupational resources available on the internet can be categorized into four types: assessment services, communication web sites, occupational information, and career-related databases. A
counselor needs to help clients identify their needs and guide them to the appropriate resources.

In the present study the researcher provided two internet resources to the participants in order for them to collect reliable information. The two sites introduced to the participants included the Career Matrix developed by the Japanese government affiliated institution and the O*Net developed by the U.S. Department of Labor.

Summary

Recently, career counseling theories have gained public attention in Japan due to the systemic changes of employment practices due to the globalization of business competition and the long economic recession. Japanese researchers and school systems alike have started to introduce career counseling theories from the U.S. However, the multicultural application of a counseling theory from one culture to another needs careful investigation of whether or not the theory has universality or needs to be adapted to the specific culture (Leong, 1993; Savickas, 2003). In fact, the occupational-seeking patterns of the majority of Japanese workers are different from Americans. It is important to investigate whether or not a career counseling theory developed in the U.S. can effectively help Japanese students in their cultural context.

In fact, traditionally it is assumed that job hunters already possess the necessary skills and knowledge before entering the work force in the U.S. Person-environment fit theories exemplified by Holland’s (1997) RIASEC theory, therefore, help clients to make occupational choices as a preparation for entering the labor market. Similarly, in Japan there are also some jobs whose occupational activities are somewhat fixed and clear or
specialized. People seek certain educational or vocational training and obtain their desired occupation. Person-environment fit theories view one’s work contents as static entities and attempt to help individuals prepare for entering world of work by selecting their future occupation. Takeuchi (2003) categorized this career choice model as the *occupational model*, which is the same as the traditional career choice in the U.S.

However, the world of work and employment practices in Japan do not always fit this system. The majority of new Japanese graduates are hired by companies and governments without specifying their occupational activities and the graduates are expected to work there long term. The majority of male and female workers are employed as a *sougou-shoku* or *ippan-shoku*, which does not specify their occupation, and they are considered as generalists. Their job assignments vary throughout their career path, and the job training is provided as the need arises. There is a very weak link between one’s college major and one’s future occupation. This career development model can be categorized as the *workplace/company model* (Takeuchi, 2003) and places more importance on belonging to a company or organization.

In the past 10 to 15 years, because of the globalization of business organizations, the employment practices in Japan are becoming oriented toward the *occupational model*. At the same time, conversely governments and business sectors view lifetime employment as a key factor for Japan’s strong economy and strive to keep this system. Thus, today, two career choice models, the *occupational model* and the *workplace/company model*, coexist in Japan. This complexity continues to make it difficult for high school students to make future career plans.
The high school years can be viewed as a critical period when adolescents need to establish a more crystallized vocational identity in order to make future career and educational plans. The intensity of this critical period is especially prominent for Japanese high school students because they have to make decisions on their education before taking entrance examinations for college or make career decisions to enter the world of work by the end of high school. However, Japanese school systems had been indifferent to helping them to work on this developmental issue.

Recently, Japanese school systems have developed the career education framework which is very similar to that in the U.S. It seems that the Japanese school systems are implementing the career education systems based on the occupational seeking model. However, little is known about the effectiveness of a career counseling approach based on the *occupational model* in Japanese cultural context.

Helping students who seek careers based on the *occupational model* may obtain benefit from a career education system similar to the American system. However, the vocational identity development of students who pursue their career by the *workplace/company model* as a *sougou-shoku* or *ippan-shoku* employee is yet to be studied. In such an employment practice, individual interests have a lower priority than the company’s or organization’s human resource planning. Considering these cultural differences in employment practice, it is imperative to investigate the applicability of counseling theories developed in the U.S. which emphasize choosing one’s occupation before entering the labor market. In order to meet this need, the present study attempted to investigate the effectiveness of such an *occupational model* oriented career counseling
theory in the Japanese cultural context, and used Holland’s (1997) theory as a good example of this model.

Holland’s (1997) theory is one of the most widely studied and practiced theories in the U.S. His theory helps individuals to choose their occupation based on their interests, with the goal of matching the necessary educational and vocational training for the desired occupation. The typology of his theory is also utilized with the O*Net web site which is developed by the U.S. Department of Labor. His typology, one of the most recognized theories, and this web site are widely used by career counselors and school counselors in the U.S. Therefore, this theory can be considered as a good example of a counseling theory which assumes the occupational model as one’s career choice and development model.

Although the theoretical invariance of Holland’s (1997) theory to Japanese culture has begun to acquire empirical evidence, the effectiveness of this theory as a tool to help Japanese students to develop vocational identity remains to be investigated. Therefore, it is important to investigate the effectiveness of this approach, especially in light of cultural differences characterized by the two types of Japanese employment practices which are considered to affect individuals’ career development pattern and are related to gender differences.
CHAPTER THREE

Methodology

This chapter outlines the methodology used in this study and rationale for these choices. The sample population, the sampling plan, and the operational variables are defined. Instrumentation, data collection procedures, and analyses are addressed as well.

Research Design

Participants were non-randomly selected, however, this was a true experimental design due to random assignment and addressed two research questions. The first research question involved testing the difference between the posttest MVS scores among eight groups divided by the two levels of three independent variables: treatment condition (treatment group and control group), sex (male and female), and job-seeking orientation (workplace/company model and occupational model). A $2 \times 2 \times 2$ factorial Analysis of Covariance (ANCOVA) was used to analyze this first question. The pretest MVS scores were used as a covariate in order to reduce the error variances of posttest scores.

The null hypothesis for this first question is divided into the following seven subsequent null hypotheses including three main effects (a to c) and four interaction effects (d to g): (a) There is no statistically significant difference between the adjusted means of posttest vocational identity scores between the groups in the treatment condition and the control condition; (b) There is no statistically significant difference between the adjusted means of posttest vocational identity scores between males and females; (c) There is no statistically significant difference between the adjusted means of posttest vocational identity score between the students with the workplace/company model and
the occupational model; (d) There is no statistically significant interaction effect by treatment condition and sex differences on the adjusted means of posttest vocational identity score; (e) There is no statistically significant interaction effect by treatment condition and job-seeking orientations on the adjusted means of posttest vocational identity score; (f) There is no statistically significant interaction effect by job-seeking orientations and sex differences on the adjusted means of posttest vocational identity score; and (g) There is no statistically significant interaction effect by treatment condition, sex differences, and job-seeking orientations on the adjusted means of posttest vocational identity score.

The second aim of this study was to explore the effect of Holland’s (1997) RIASEC approach, which is based on the assumption that individuals need to clarify their occupational interest or personality and match it to the work environment, which result in selecting an occupation before their employment (Lowe, 2005). Do participants change their job-seeking orientation after receiving the intervention? The null hypothesis for the second question is as follows: There is no statistically significant asymmetrical change that occurs in the proportion of subjects who changed their job-seeking orientation before and after receiving the RIASEC interest inventory and conducting an occupational information search. McNemar’s test for significance of change was used for this Chi-square test analysis (McNemar, 1969).
Operational Definitions of the Variables

Independent variables. The first independent variable was sex. It refers to the self-identified sex of an individual. Participants were asked to indicate whether they were male or female on the demographic question in this study.

The second independent variable was participants’ job-seeking orientation. Job-seeking orientation refers to the attitude or approach of Japanese job seekers on how to obtain a certain job and/or how to view one’s career development. This is not a psychometrically validated construct. However, considering the cultural differences of employment practices in Japan, this dimension needs further investigation in the process of internationalization of a career theory.

In the present study, two types of job-seeking orientation were investigated: the occupational model and the workplace/company model. The former was conceptualized such that a job seeker first decides his or her desirable future occupation and obtains necessary educational training, then looks for a workplace where he/she can do this occupation and develop his/her career. The latter was conceptualized such that a job seeker first decides on an organization or company where he/she wishes to work and takes various jobs assigned by the employer and climbs the career ladder within the organization.

Participants were asked about their perspective in the pre- and posttest demographic questionnaire. Before conducting the actual study, a pilot study was conducted with 9th grade students (n = 10) to make sure that they understand the
language used in the demographic questionnaire. They were asked the following question:

For obtaining a job that you wish to do in the future, which of the following approaches would you like to take? Please indicate the number either (1) or (2). (1) first I would like to decide on a company or organization for whom I wish to work. Then I will work on assigned various jobs and develop my career within the company or organization. That is, deciding on the desired workplace is more important than specifying the desired occupation. (2) First I would like to decide on an occupation that I like. Then I will look for a workplace where I can do this particular job and develop my career within this occupation. That is deciding on the desired occupation is more important than the workplace where I will do this job. (see item E on Appendix C).

All participants in the pilot study chose the second option which indicated the occupational model. However, there were inconsistent answers on other items. My Vocational Situation (MVS: Holland, Daiger, & Power, 1980), which was used for measuring their vocational identity, had an item asking them to list the occupational titles they were considering at the time of the study. Three of them listed kaisha-in, which literally means a company employee. One participant listed the specific name of a well-known company. This trend was shown in the actual study with 10th to 12th grade students. This item might have been confusing to the students or too specific for them to imagine one company’s name at the high school level and was not used to categorize their job-seeking approach.
For this reason another item was added to the actual study in the pre- and posttest demographic questionnaire (see item F on Appendix C and item E on Appendix K respectively). The English translations of this specific question were:

“About your career, please indicate which of the following statements, (1) or (2), closely represents your current thoughts.

(1). First I would like to choose a type of industry (e.g.; manufacturer, trading firm, financial industry, mass media, and government, etc) where I want to work, Then, I would like to engage in various occupations in the industry.

(2). Regardless of the types of industries (e.g.; manufacturer, trading firm, financial industry, mass media, and government, etc), I would like to engage in the occupation which utilizes the skills and abilities I possess (or I am going to acquire).”

This item was used to categorize participants by two job-seeking approaches. The first option indicated the workplace/company model, and the second indicated the occupational model. The term “industries” was used in order to broaden the category rather than asking them to imagine one specific company. The item G on Appendix C was added to see if there was any relation to the other variables, but not intended to be used for an this independent variable for this study.

The third independent variable was the treatment condition. The treatment group in this study received the Vocational Readiness Test (Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2007). This test is based on Holland’s (1997) RIASEC theory and was developed for Japanese high school students. It provides the test taker with his or her RIASEC personality types. After taking the test, participants received written instructions on how
to search for occupational information on both Japanese and English websites. The Japanese web site, called Career Matrix (CMX) was developed by Roudou-Seisaku-Kenkyu-Kenshu-Kikou from the Japan Institute for Labour Policy and Training, which is an organization affiliated with the Ministry of Health, Labour, and Welfare. The English website was the O*Net on which participants can search and sort occupational information by using their RIASEC codes. Unfortunately, there was no Japanese website identified which had equipped the RIASEC code search. Therefore, O*Net was introduced to the participants to compensate for this limitation. Participants were then given homework to research information on their occupational interests (Appendix I). Participants were advised not to be too strict on their RIASEC code search, because the compatibility between occupational environments in the U.S. and Japan had not been fully studied yet.

The control group was placed on a waiting list. They received the RIASEC assessment and the same instructions on the occupational information search after completing the posttest.

Dependent variables. Vocational identity refers to “the possession of a clear and stable picture of one’s goals, interests, personality, and talents. This characteristic leads to relatively untroubled decision-making and confidence in one’s ability to make good decisions in the face of inevitable environmental barriers” (Holland, Daiger, & Power, 1980, p. 1). My Vocational Situation (MVS; Holland, Daiger, & Power, 1980) was used to measure this variable.
Identification of Population

The target population for this research were Japanese high school students who were temporarily residing in the U.S. Typically they come to the U.S. because of their parents’ oversea work assignments, which usually last three to five years, and plan to go back to Japan in the near future. This population was chosen because they were considered to have better English proficiency compared to students in Japan. Although the use of English in this research was kept to a minimum, it involved utilizing the O*Net web site in order to compensate for a lack of a comprehensive occupational information system in Japan.

Sampling Plan

The sample for this study was recruited by distributing a letter through the teachers in full-time Japanese schools and Japanese Overseas Supplementary Schools, or Hoshu-kou, in the United States. The U.S. permanent residents and those who were planning to seek jobs in the U.S. were eliminated from the sample due to the purpose of this research. Japanese high school students are equivalent to 10th to 12th graders in the U.S. The minimum sample size had been determined to be \( N = 136 \) (SPSS SamplePower 2.0, 2000) to detect a medium effect size with a \( 2 \times 2 \times 2 \) factorial Analysis of Covariance (ANCOVA) at .05 alpha (two-tailed) and a power of .80 (Cohen, 1992).

The analysis for the second hypothesis was conducted only for the participants in the treatment group by using the McNemar symmetry chi-square test. The researcher was not able to predict the magnitude of the effect size of this intervention before collecting the data. Therefore, the minimum sample size for this secondary analysis could not be
 determined a priori, which may have resulted in the increased possibility of a Type II error.

**Instrumentation**

*Demographic Questionnaire.* A demographic questionnaire was given to the participants to collect information such as sex, grade level, and country of their future job hunting. In addition, their job-seeking orientation discussed in the independent variable section of this chapter was included (see details in Appendix C).

*My Vocational Situation (MVS).* The *My Vocational Situation* (MVS; Holland, Daiger, & Power, 1980) contains 20 items. The first 18 items are designed to measure Vocational Identity. Holland et al. (1980) defined vocational identity as such:

Vocational Identity means the possession of a clear and stable picture of one’s goals, interests, personality, and talents. This characteristic leads to relatively untroubled decision-making and confidence in one’s ability to make decisions in the face of inevitable environment (p.1).

A low score on this scale indicates confusion about one’s career identity and a lack of self-satisfaction. Item 19 (Occupational Information Scale) includes four yes-no questions which were developed to identify one’s need for vocational information. Finally, item 20 consists of four questions that examine environmental or personal obstacles to a chosen occupational goal. Low scores on these scales indicate a lack of vocational information and a presence of significant barriers respectively in order to make a career decision. This instrument was selected because its reliability and construct validity have been supported by many researchers and has been widely
used as a pre-/post-criterion for evaluating career intervention (Holland, Johnston, & Asama, 1993).

Holland, Daiger, and Power (1980) reported that the Vocational Identity scale had a Kuder-Richardson 20 (KR 20) estimate of reliability of .86 for both male and female high school students. The Occupational Information (Item 19) and Barriers (Item 20) scales both had a relatively low degrees of internal consistency. KR 20s for the former were .39 and .44 for male and female high school students respectively, and the latter were .23 for both sexes. Due to the low degree of reliability only the Vocational Identity scale was used for data analysis in this study.

Holland, Daiger, and Power (1980) tested multiple hypotheses about the validity of this instrument and reported them in the test manual. They administered the MVS to 824 persons in high school, college, and businesses. Their ages ranged from 16 to 69 and analyzed the correlations with age, educational level, vocational aspirations, and external ratings. For external ratings, student experimenters rated a small subsample ($N = 245$) with five-step ratings (strongly agree = 5; agree = 4; don’t know = 3; disagree = 2; strongly disagree = 1) on the following attributes: (a) This person appears well-organized; (b) This person appears at loose ends; (c) This person seems self confident; (d) This person seems tense and uncomfortable; and (e) This person seems competent to handle his/her life well.

They hypothesized that the Vocational Identity score should be positively correlated with age. They reported a correlation of .28 for males ($p < .01$) but did not report a significant result for females. The Vocational Identity scale was expected to be
negatively correlated with vocational aspirations which participants listed in the MVS. They found a significant correlation of -.16 for male \((p < .05)\) and -.13 for female \((p < .05)\). Holland, Daiger, and Power (1980) concluded that “male and females with a clear sense of identity … have a small number and variety of occupational aspirations” \(p.4\).

For external ratings, Holland, Daiger, and Power (1980) hypothesized that high Vocational Identity scores were expected to be well organized, not at loose ends, self-confident, not tense and uncomfortable, and competent to handle their lives well. They found significant item correlations with: (a) for males .50 \((p < .01)\) and for females .26 \((p < .01)\); (b) for males -.41 \((p < .05)\) and for females -.25 \((p < .01)\); (c) for males .31 \((p < .01)\) and for females .28 \((p < .01)\); (e) for males .42 \((p < .01)\) and for females .32 \((p < .01)\). The correlations with (d) were not significant for both sexes.

Although some variables have small degrees of correlations, most of their hypotheses were supported.

Tinsley (1985) criticized that the MVS manual did not include enough data and statistical analysis to support its validity; however this measurement has been widely studied by many researchers since its publication. Holland, Johnston, and Asama (1993) summarized that research and concluded that the Vocational Identity scale of MVS had substantial construct validity as well as sufficient reliability.

MVS was translated into Japanese by following a three-step process described by Hansen (1987). First, two native Japanese speakers translated the test from the original language to Japanese. Both of them have bachelor’s degrees from Japan, obtained their graduate level education in the U.S., and were doctoral candidates in the fields of
education and counselor education. One holds an English teacher license for the 7th to 12th grades in Japan. The other holds a school counselor license in the U.S. They had both resided in the U.S. for more than 8 years and were competent in both languages. Both of them conducted forward translations separately and compared the Japanese items. They remedied any discrepancies between the two translations and created a merged version. Second, this merged Japanese version was back-translated into English by a native English speaker who had lived in Japan for several years and obtained a bachelors degree as well as a counselor certificate in Japan. He was also a doctoral candidate in the field of counselor education at a university in the U.S.

Third, the original and back-translation versions were compared by the researcher and the researcher’s dissertation advisor. Because items ten and twelve were identified as having discrepancies, all the forward and backward translators collaboratively compared the original, back-translation, and Japanese versions. They concluded that the Japanese translations of these two items were closer to the original version than to the back-translation, and, therefore, kept them as they were.

*Vocational Readiness Test (VRT).* Vocational Readiness Test (VRT) was developed in Japan primarily for Japanese junior and senior high school students whose grades range from 7th to 12th grades (National Institute of Employment and Vocational Research, 1989). It consists of three subordinate assessments: Tests A, B, and C. Test A includes a list of 54 work related activities. In this study, participants were asked whether they would like to engage in those activities and needed to answer either yes, neutral, or no. This section was designed to examine one’s vocational interests in terms of Holland’s
(1997) RIASEC category. Test B involves 18 questions and assesses one’s preference for three types of activities, including data, people, and things (National Institute of Employment and Vocational Research, 1989). Test C has the same 54 activities as Test A, but participants were asked to indicate if they feel confident to perform those activities. Three options, yes, neutral, and no are provided. The scores on Tests A and C are accumulated for obtaining the individual RIASEC types. Test B score was not used in the present study, because it was not related to the construct of RIASEC types.

VRT was chosen because it had been standardized with a large sample of Japanese students ($N = 28,070$) all over the country (Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2007). A high degree of internal consistency was reported in the test manual. Cronbach’s $\alpha$ ranged from .83 to .90 for Tests A and B. The Pearson product-moment correlation coefficient between RIASEC types in Tests A and B ranged from .786 to .858 ($p < .01$). Most importantly, this was the only one RIASEC measurement recognized at this point that has been specifically developed for Japanese high school students. According to the author the test appeared to have good face and content validity. It was developed based on the body of knowledge accumulated through the development of the well established Vocational Preference Inventory Japanese version (Roudou-Seisaku-Kenkyu-Kenshu-Kikou, 2002). The test items were carefully chosen from each occupational category and revised through two pilot studies with a sample of $N = 1,040$ and $N = 502$. Each activity statement uses the language level which is understandable to high school students.
Data Collection Procedures

The initial recruitment of the participants was done by distributing a letter through the full-time Japanese schools and Hoshu-kou in the U.S. The letter included an explanation of the research. If students were interested in participating in the research, they were asked to return the attached request form for the first research materials including an assent form for students and a consent form for their guardians. Thereafter, the participants and the researcher maintained contact directly by postal mail. Table 1 represents the following data collection procedure which consisted of four steps. All the research materials were presented in Japanese.

In the first step, participants received an assent form and a consent form (Appendix A), instructions on step one (Appendix B), demographic questionnaire (Appendix C), and the MVS. They were asked to return the demographic questionnaire and the MVS. Then, based on their sex and job-seeking orientation, stratified random assignments assigned them to either the treatment condition or the control condition. Participants in the control condition were placed on a waiting list and asked to wait 20 days, while those in the treatment condition proceeded to step two.

In step two (Appendix D), participants were asked to take the VRT and return the answer sheet. The researcher calculated the score.

In step three (Appendix E), the results of the VRT (Appendix F) were sent to the treatment group along with the instructions on how to search the occupational information on the Career Matrix (CMX) and O*Net web sites (Appendix G and H respectively). For homework, they were asked to document what kind of occupational
information they searched and return the sheet to the researcher (Appendix I).

Last, the participants in the treatment group who completed the occupational information search sheet as well as the participants in the control group who had waited 20 days after step one proceeded to step four (Appendix J). They were asked to fill out a posttest demographic questionnaire (Appendix K) which included the item on their job-seeking orientation, and were asked to answer the MVS to measure their vocational identity score. Subsequently, the control group was given the VRT and the same instructions on searching occupational information.
Table 1

*Data Collection Procedure*

<table>
<thead>
<tr>
<th></th>
<th>Treatment condition</th>
<th>Control condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>Pretest Demographic Questionnaire</td>
<td>Pretest Demographic Questionnaire</td>
</tr>
<tr>
<td></td>
<td>MVS</td>
<td>MVS</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>VRT</td>
<td>20 days interval</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>The Results of VRT</td>
<td>(Interval continues)</td>
</tr>
<tr>
<td></td>
<td>Occupational Information Search</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>Posttest Demographic Questionnaire</td>
<td>Posttest Demographic Questionnaire</td>
</tr>
<tr>
<td></td>
<td>MVS</td>
<td>MVS</td>
</tr>
<tr>
<td></td>
<td>VRT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Results of VRT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupational Information Search</td>
<td></td>
</tr>
</tbody>
</table>
Data Analysis Procedures

After the instruments were collected, the researcher entered the data into the Statistical Package for the Social Sciences (SPSS) (Sixteenth version).

Data Analysis

The following parameters were set a priori for both analyses: $p < .05$ (two-tailed), power of .80, and medium effect size (Cohen, 1992). A $2 \times 2 \times 2$ factorial Analysis of Covariance (ANCOVA) was used to analyze the first question. ANCOVA requires that the following assumptions to be met: (a) independent data, (b) a normal distribution of the scores, (c) homogeneity of variance, (d) linear relationship between the dependent variable and the covariate, and (e) homogeneity of regression. The researcher took steps to ensure and determine whether these assumptions were met by utilizing the following approaches: (a) the data collection procedure protected the subject responses not being dependent; (b) both the dependent variable and covariate were examined for normal distribution around the mean by normality tests and producing a histogram; (c) Levene $F$ statistics were used to test the assumption of homogeneity of variance; (d) the nature of the relationship between the dependent variable and the covariate were investigated by examining the residual plots of the data points; and (e) the test for homogeneity of regression was conducted by using SPSS General Linear Model (GLM) program (Tabachnick & Fidell, 1996). Post hoc multiple comparison tests were planned to be conducted when significant differences are found. The Tukey method was selected if each cell had an equal number of samples while the Tukey/Kramer (TK) method was used when each cell had disproportionate samples.
A chi square test was used to analyze the second question. This test requires the assumption of independent samples. However, this question compared the two responses in pre- and posttest conditions from the same group of samples, and therefore the assumption was not met. For this reason, a McNemar symmetry chi-square test was used to analyze the data. Since this is a secondary analysis, the effect size and power could not be determined a priori, therefore the appropriate sample size was not calculated. Consequently, the sample size for this analysis was the number of participants in a treatment group who completed the posttest demographic questionnaire (Appendix K).
CHAPTER FOUR

Results

The purpose of the present study was to examine the effect of Holland’s (1997) RIASEC theory on Japanese high school students’ vocational identity scores as measured by My Vocational Situation (MVS: Holland, Daiger, & Power, 1980). This chapter presents the subject characteristics, analysis of the reliability of the translated version of the vocational identity measurement, and the statistical analyses of hypotheses and assumptions. This chapter also reports supplementary analyses in order to better understand the effects of taking the RIASEC inventory and conducting an occupational information search.

Subject Characteristics

The sample for this study consisted of Japanese high school students living in the United States. The students attended and were recruited through full-time Japanese schools and Japanese Overseas Supplementary Schools all over the country. There were 45 schools listed on the Ministry of Education, Culture, Sports, Science, and Technology data base. All schools were contacted by mail to seek agreement to distribute the recruitment letter. Sixteen schools agreed to participate and distributed the letter to a total of 374 students (male = 181, female = 193). Seventy-six students were interested in participating in the study and requested the consent form (Appendix A) and the materials included in Step 1 (Appendix B, and C). Out of those students, 71 participants returned the consent and assent form and were active participants. This resulted in a 19% response
rate. Students who were not planning to go back to Japan for future employment were not recruited because of the purpose of the present study.

Table 2 represents the general characteristics of the sample. All four steps were completed by 81.6% of students \((n = 58)\). Males accounted for 50% \((n = 29)\) of the subjects in the study and females represented the other 50% \((n = 29)\). The majority of the students in this study reported being in either the ninth grade \((43.1\%, n = 25)\) or the tenth grade \((34.5\%, n = 20)\). Students in the eleventh grade accounted for an additional 19.0% \((n = 11)\) of the sample while twelfth grade was an additional 1.7% \((n = 1)\). One student \((1.7\%)\) left this item blank. All of the students in this study were attending an American school \((n = 57, 98.3\%)\), while one student omitted filling out this item \((1.7\%)\). A majority \((91.4\%)\) of the students were also attending a Japanese supplementary school \((n = 53)\) while three attended an American school only \((5.2\%)\). One student reported attending both an American school and full-time Japanese school \((1.7\%)\).

Most of the students in the sample answered that they were planning to go to college or a vocational school after finishing high school. A total of 38 students reported wanting to attend a four-year college \((65.5\%)\) and 15 were planning to go to a four-year college and continue to graduate school \((25.9\%)\). Three students indicated their plan to attend a vocational school and/or a two-year college \((5.2\%)\). One student reported a plan to return to work after finishing high school \((1.7\%)\). There was one missing value of this item \((n = 1, 1.7\%)\). All students indicated that they were planning to job-hunt in Japan in the future \((n = 57, 98.3\%)\), except one subject who left the item blank \((1.7\%)\). Among them, 17 students were also thinking of job hunting in the U.S. \((29.3\%)\) besides Japan.
Table 2

*General Sample Characteristics (n = 58)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>29</td>
<td>50.0</td>
</tr>
<tr>
<td>Female</td>
<td>29</td>
<td>50.0</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100.0</td>
</tr>
<tr>
<td>Grade</td>
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<td></td>
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<tr>
<td>9</td>
<td>25</td>
<td>43.1</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>34.5</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>19.0</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100.0</td>
</tr>
<tr>
<td>Attending school(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>American school</td>
<td>3</td>
<td>5.2</td>
</tr>
<tr>
<td>American school/Japanese supplemental</td>
<td>53</td>
<td>91.4</td>
</tr>
<tr>
<td>American school / full-time Japanese school</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td>Variable</td>
<td>( f )</td>
<td>( % )</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>Planned highest educational attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Vocational school / two years college</td>
<td>3</td>
<td>5.2</td>
</tr>
<tr>
<td>Four year college</td>
<td>38</td>
<td>65.5</td>
</tr>
<tr>
<td>Graduate school</td>
<td>15</td>
<td>25.9</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100.0</td>
</tr>
<tr>
<td>Place of job hunting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>37</td>
<td>63.8</td>
</tr>
<tr>
<td>Japan/America</td>
<td>17</td>
<td>29.3</td>
</tr>
<tr>
<td>Japan/other</td>
<td>3</td>
<td>5.2</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Tables 3 and 4 show the characteristics of the sample obtained from the two items on the demographic questionnaire. Table 3 represents the students’ length of stay in the U.S ($n = 58$). The mean was 4 years and 8.8 months (56.8 months). The median was 2 years and 11.5 months (35.5 months). The skewness of 1.30 indicates that the distribution is positively skewed. The longest stay in the U.S. by a participant was 17 years and eight months.

Table 4 indicates how much students are concerned about their future in terms of Japan’s economic situation. Students answered on the 5-point scale ($n = 57$): 1 = not concerned at all, and 5 = very concerned. The total mean score was 3.88 ($SD = .83$). There were no statistically significant differences between male ($n = 29, M = 3.90, SD = .77$) and female ($n = 28, M = 3.82, SD = .90$), $t(55) = .338, p = .74$. 
Table 3

Demographic of Sample by the Length of Stay (months) in the U.S. (n = 58)

<table>
<thead>
<tr>
<th></th>
<th>$M$</th>
<th>$Mdn$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>54.9</td>
<td>34.0</td>
<td>48.8</td>
</tr>
<tr>
<td>Female</td>
<td>58.8</td>
<td>41.0</td>
<td>58.0</td>
</tr>
<tr>
<td>Total</td>
<td>56.8</td>
<td>35.5</td>
<td>53.1</td>
</tr>
</tbody>
</table>

*Note.* Longest participant had stayed in the U.S. for 212 months (17.7 years). The skewness of 1.30 indicates that the distribution is positively skewed.

Table 4

Degrees of participants’ worry about their future (n = 57)

<table>
<thead>
<tr>
<th></th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3.90</td>
<td>.77</td>
</tr>
<tr>
<td>Female</td>
<td>3.82</td>
<td>.90</td>
</tr>
<tr>
<td>Total</td>
<td>3.86</td>
<td>.83</td>
</tr>
</tbody>
</table>

*Note.* Students answered on the 5-point scale. One indicated not concerned at all, and five indicated very concerned.
Tables 5 and 6 shows the number of participants who completed all steps in the present study and how long it took from start to finish. Table 5 represents the number of participants who completed each step. The treatment group \((n = 43, 60.6\%)\) started with 24 males (33.8\%) and 19 females (26.8\%), whereas the control group \((n = 28, 39.4\%)\) consisted of 16 males (22.5\%) and 12 females (16.9\%) at the beginning of the study. There were 14 males (19.7\%) and 17 females (23.9\%) in the treatment group who completed all the steps. In the control group 15 males (21.1\%) and 12 females (16.9\%) completed all of the steps in the treatment group. A total of 58 students (81.6\%) completed all of the steps in the process. The researcher lost contact with the other 13 students (18.4\%). The majority of loss occurred at the third step of the treatment group which, involved a total of 11 students (15.5\%). Male students comprised 81.8\% of the loss \((n = 9)\).

Table 6 shows the number of days it took for the treatment and control group to complete the entire process from step 1, which included the pretest vocational identity measure (MVS: Holland, Daiger, & Power, 1980) to step 4, which included the posttest vocational identity measure (MVS). The mean number of days to complete these steps for the treatment group was 37.43 days \((SD = 9.71)\), and for the control group 34.04 days \((SD = 12.35)\). The distribution of the treatment group had a skewness of .205 and a kurtosis of .844, while that of control group showed a skewness of 1.203 and a kurtosis of 1.408. The number of days between the pretest MVS and posttest MVS had no statistically significant difference for both the treatment and control groups, \(t (51) = 1.116, p = .27\).
Table 5

Number of Participants Who Completed Each Step

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>24 (33.8)</td>
<td>23 (32.4)</td>
<td>14 (19.7)</td>
<td>14 (19.7)</td>
</tr>
<tr>
<td>Female</td>
<td>19 (26.8)</td>
<td>19 (26.8)</td>
<td>17 (23.9)</td>
<td>17 (23.9)</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>16 (22.5)</td>
<td>_</td>
<td>_</td>
<td>15 (21.1)</td>
</tr>
<tr>
<td>Female</td>
<td>12 (16.9)</td>
<td>_</td>
<td>_</td>
<td>12 (16.9)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>71 (100)</td>
<td>_</td>
<td>_</td>
<td>58 (81.6)</td>
</tr>
</tbody>
</table>

Table 6

Number of Days to Complete from Step 1 to Step 4

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Valid Percent</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>28</td>
<td>90.3</td>
<td>37.43</td>
<td>9.71</td>
</tr>
<tr>
<td>Control</td>
<td>25</td>
<td>92.6</td>
<td>34.04</td>
<td>12.35</td>
</tr>
</tbody>
</table>

Note. The number of days from pretest MVS to posttest MVS of both groups were not statistically different, \( t (51) = 1.116, p = .27 \).
Reliability of Measurement

The present study used the My Vocational Situation assessment (MVS; Holland, Daiger, & Power, 1980) to measure the vocational identity of the participants. Vocational identity refers to “the possession of clear and stable picture of one’s goals, interests, personality, and talents” (p. 1). This measurement consists of 18 items. The higher the score, the clearer and more stable the vocational identity one possesses. This measurement was translated into Japanese in the present study. Table 7 and 8 represents the internal consistency of the Japanese MVS.

Table 7 shows the internal consistency of the Japanese MVS at the pretest \((n = 66)\). Among the 71 students who completed this measurement at the pretest, five of them \((7\%)\) were excluded from the analysis because of one or more missing items. The overall internal consistency for the Japanese MVS at the pretest was acceptable as indicated by an alpha of .811. Table 8 shows the internal consistency at the posttest \((n = 56)\). Fifty-eight students completed the posttest Japanese MVS, but two of them were eliminated from the analysis because of missing values on their answer sheet. The overall internal consistency for the Japanese MVS at the posttest showed an alpha of .782 which indicated a desirable level.
Table 7

Reliability Analysis of Japanese My Vocational Situation: Pretest

<table>
<thead>
<tr>
<th>Item number</th>
<th>Corrected item-total correlation</th>
<th>$\alpha$ if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.252</td>
<td>.810</td>
</tr>
<tr>
<td>2</td>
<td>.509</td>
<td>794</td>
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<td>3</td>
<td>.527</td>
<td>.795</td>
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<tr>
<td>4</td>
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<td>5</td>
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<td>6</td>
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<td>.824</td>
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<tr>
<td>18</td>
<td>.426</td>
<td>.800</td>
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</table>
Table 8  

Reliability Analysis of Japanese My Vocational Situation: Posttest

<table>
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<tr>
<th>Item number</th>
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<th>$\alpha$ if item deleted</th>
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</tr>
<tr>
<td>7</td>
<td>.285</td>
<td>.776</td>
</tr>
<tr>
<td>8</td>
<td>.494</td>
<td>.762</td>
</tr>
<tr>
<td>9</td>
<td>.494</td>
<td>.762</td>
</tr>
<tr>
<td>10</td>
<td>.584</td>
<td>.755</td>
</tr>
<tr>
<td>11</td>
<td>.155</td>
<td>.785</td>
</tr>
<tr>
<td>12</td>
<td>.304</td>
<td>.775</td>
</tr>
<tr>
<td>13</td>
<td>.570</td>
<td>.755</td>
</tr>
<tr>
<td>14</td>
<td>.254</td>
<td>.778</td>
</tr>
<tr>
<td>15</td>
<td>.159</td>
<td>.787</td>
</tr>
<tr>
<td>16</td>
<td>.451</td>
<td>.765</td>
</tr>
<tr>
<td>17</td>
<td>.125</td>
<td>.789</td>
</tr>
<tr>
<td>18</td>
<td>.374</td>
<td>.771</td>
</tr>
</tbody>
</table>
Statistical Analyses

For the purpose of this study, two research questions were analyzed. The first research question involved testing the difference between the posttest MVS scores among eight groups divided by the two levels of three independent variables: treatment condition (treatment group and control group), sex (male and female), and job-seeking orientation (workplace/company model and occupational model). A $2 \times 2 \times 2$ factorial Analysis of Covariance (ANCOVA) was used to analyze this first question. The pretest MVS scores were used as a covariate.

The second research question involved testing to see if there was a statistically significant asymmetrical change that occurred in the proportion of subjects who changed their job-seeking orientation before and after receiving the RIASEC interest inventory and conducting an occupational information search. A McNemar symmetry chi-square test was performed to analyze the data.

Frequency of Each Cells and Central Tendencies. Table 9 represents the number of subjects, mean, and standard deviation of the pretest MVS score, and those of the posttest MVS score in each of the eight cells. The name of each cell is abbreviated as follows: the capital letters T, C, M, F, W, and O stand for Treatment condition, Control condition, Male, Female, Workplace/company model, and Occupational model, respectively. By the stratified randomized assignment based on the students’ sex and job-seeking orientation, the participants were placed in each of the eight cells. In order, the frequencies of eight cells, TMW, 8.62% ($n = 5$), TMO, 15.52% ($n = 9$), TFW, 5.17% ($n = 3$), TFO, 24.14% ($n = 14$), CMW, 8.62% ($n = 5$), CMO, 17.24% ($n = 10$), CEW,
3.45\% (n = 2), and CFO, 17.24\% (n = 10). There were statistically significant differences in the number of students assigned in these eight cells, $\chi^2 (7, n = 58) = 16.483, p = .021$. This result indicates that the cell sizes were not equal.

Additionally, a chi-square 2 (sex) 2 (job-seeking orientation) crosstab was performed to see whether or not there was a sex difference in job-seeking orientation. Although the frequency of each cell showed some hints of sex difference pattern as follows: male and workplace model (n = 10), male and occupational model (n = 19), female and workplace/company model (n = 5), and female and occupational model (n = 24); there was no statistically significant difference, $\chi^2 (1, n = 58) = 2.248, p = .134$. 
Table 9

Descriptive Statistics of Each Cell for $2 \times 2 \times 2$ ANCOVA ($n = 58$)

<table>
<thead>
<tr>
<th>Cell</th>
<th>N (%)</th>
<th>Pretest MVS</th>
<th>Posttest MVS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>TMW</td>
<td>5 (8.62)</td>
<td>11.20</td>
<td>4.66</td>
</tr>
<tr>
<td>TMO</td>
<td>9 (15.52)</td>
<td>6.78</td>
<td>3.15</td>
</tr>
<tr>
<td>TFW</td>
<td>3 (5.17)</td>
<td>5.00</td>
<td>1.00</td>
</tr>
<tr>
<td>TFO</td>
<td>14 (24.14)</td>
<td>6.43</td>
<td>3.90</td>
</tr>
<tr>
<td>CMW</td>
<td>5 (8.62)</td>
<td>6.60</td>
<td>3.29</td>
</tr>
<tr>
<td>CMO</td>
<td>10 (17.24)</td>
<td>6.00</td>
<td>3.37</td>
</tr>
<tr>
<td>CFW</td>
<td>2 (3.45)</td>
<td>9.50</td>
<td>3.54</td>
</tr>
<tr>
<td>CFO</td>
<td>10 (17.24)</td>
<td>7.50</td>
<td>4.03</td>
</tr>
<tr>
<td>Total</td>
<td>58 (100)</td>
<td>7.05</td>
<td>3.75</td>
</tr>
</tbody>
</table>

Note. T = Treatment group, C = Control group, M = Male, F = Female, W = Workplace/company model, and O = Occupational model.
The group means of pretest MVS scores ranged from 5.00 for TFW to 11.20 for TMW. There were no statistically significant differences between the means of pretest MVS scores among the eight cells, $F(7, 50) = 1.395, p = .228$. The group means of posttest MVS scores ranged from 5.16 for TFW to 11.40 for TMW. The difference between the eight groups’ mean scores is discussed in the analysis of hypothesis section later in this chapter.

*Assumptions of ANCOVA.* ANCOVA requires that the following assumptions need to be met: (a) independent data, (b) a normal distribution of the scores, (c) homogeneity of variance, (d) linear relationship between the dependent variable and the covariate, and (e) homogeneity of regression slopes.

The first assumption of independent data was protected by the data collection procedure. Participants independently worked on each of the experiment processes and were not dependent on one another.

In order to check the second assumption of a normal distribution of the scores, histograms of the pretest MVS scores (Appendix L) and the posttest MVS scores for each of the eight groups were produced (Appendix M). There were no multiple modes and the presence of extreme scores were observed. However, deviated skewness and kurtosis were observed in some cells. In the pretest MVS scores, the TMW cell ($n = 5$) had a kurtosis of -1.84. The TMO cell ($n = 9$) showed a skewness of 1.71 and a kurtosis of 3.24. The CMW cell ($n = 5$) possessed a kurtosis of -1.69. Last, a kurtosis of 1.87 was observed in the CMO cell ($n = 10$). Kolmogorov-Smirnov tests of normality found statistically significant deviation from normality for CMO cell ($p = .011$). This test could
not calculate the significance for TFW \((n = 3)\) and CFW \((n = 2)\) cells because of small sample sizes. Shapiro-Wilk tests of normality found statistically significant deviation from normality for the TMO cell \((p = .038)\) and CMO cell \((p = .033)\). This test also could not calculate the significance for the CFW \((n = 2)\) because of the small sample size. Thus, for some cells’ normality assumptions were not met.

In the posttest MVS scores, the TMW cell \((n = 5)\) had a kurtosis of -1.02. The TMO cell \((n = 9)\) showed a skewness of -1.08 and a kurtosis of 3.11. A -1.60 skewness was observed in the TFW cell \((n = 3)\). The TFO cell \((n = 14)\) possessed a kurtosis of 1.11. Last, a skewness of 1.51 and a kurtosis of 2.07 were found in the CMW cell.

Kolmogorov-Smirnov tests of normality found a statistically significant deviation from normality for the CMO cell \((p = .011)\). This test could not calculate the significance for the TFW \((n = 3)\) and the CFW \((n = 2)\) cells because of small sample sizes. Shapiro-Wilk tests of normality found a statistically significant deviation from normality for the TMO cell \((p = .038)\) and the CMO cell \((p = .033)\). This test also could not calculate the significance for the CFW \((n = 2)\) because of the small sample size. Thus, for some cells normality assumptions were not met. Kolmogorov-Smirnov tests of normality and Shapiro-Wilk tests of normality did not find any statistically significant deviation from normality for eight groups, although the former test could not calculate significance for the TFW \((n = 3)\) and the CFW \((n = 2)\) cells because of small sample sizes, and the latter test could not for the CFW cell only. Thus, whether or not the assumption of normality was met for the posttest MVS scores was somewhat ambiguous.
The third assumption is homogeneity of variance. Levene’s $F$ statistics did not detect a statistically significant difference between the variances of posttest MVS scores among the eight groups, $F(7, 50) = .635, p = .725$. This result indicates that the error variance of the dependent variable was equal across groups. Therefore, the homogeneity of variance assumption was met.

The fourth assumption is the linear relationship between the dependent variable and the covariate. Appendix N shows the residual plot of the posttest MVS score as the dependent variable and the pretest MVS score as the covariate. No curvilinearity was observed. The representation of normality of residuals indicate that this assumption was met. There were statistically significant correlation between these two variables, $r = .777$, $p = .000$.

In order to test the last assumption of homogeneity of regression, the SPSS General Linear Model (GLM) was used. The interaction effects between pretest MVS score as the covariate and three independent variables were tested. There were no statistically significant interaction effects for any of these combinations: treatment condition and covariate, $F(1, 11) = .008, p = .928$; sex and covariate, $F(1, 11) = .032, p = .86$; job-seeking orientation and covariate, $F(1, 11) = .222, p = .64$; treatment condition, sex, and covariate, $F(1, 11) = .01, p = .922$; sex, job-seeking orientation, and covariate, $F(1, 11) = .265, p = .609$; treatment condition, job-seeking orientation, and covariate, $F(1, 11) = .207, p = .652$; treatment condition, sex, job-seeking orientation, and covariate, $F(1, 11) = 1.115, p = .297$. Therefore, the assumption of homogeneity of regression was met.
Hypotheses. For the first hypothesis, a 2 (treatment condition) × 2 (sex) × 2 (job-seeking orientation) ANCOVA was performed on scores on the posttest MVS (see Table 10). Pretest MVS scores were incorporated as the covariate. No statistically significant main effects were found for the treatment condition, $F(1, 8) = 1.364, p = .248$, for sex, $F(1, 8) = .635, p = .430$, and for job-seeking orientation, $F(1, 8) = 2.793, p = .101$. There were no statistically significant $2 \times 2$ interaction effects found for treatment condition and sex, $F(1, 8) = .1033, p = .314$, treatment condition and job-seeking orientation, $F(1, 8) = .611, p = .438$, and sex and job-seeking orientation, $F(1, 8) = .395, p = .532$. No statistically significant $2 \times 2 \times 2$ interaction effect of treatment condition, sex, and job-seeking orientation was found, $F(1, 8) = .331, p = .568$. Therefore, the null hypotheses were not rejected.
Table 10

*Analysis of Covariance for Posttest MVS Score (Treatment Condition \times Sex \times Job-seeking Orientation) (n = 58)*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>Partial $\eta^2$</th>
<th>MS</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Model</td>
<td>8</td>
<td>11.59</td>
<td>.65</td>
<td>67.47</td>
<td>.00**</td>
</tr>
<tr>
<td>Intercept</td>
<td>1</td>
<td>6.20</td>
<td>.11</td>
<td>36.10</td>
<td>.02**</td>
</tr>
<tr>
<td>Pretest MVS</td>
<td>1</td>
<td>68.00</td>
<td>.58</td>
<td>395.77</td>
<td>.00**</td>
</tr>
<tr>
<td>Treatment Cond. (T)</td>
<td>1</td>
<td>1.36</td>
<td>.03</td>
<td>7.94</td>
<td>.25</td>
</tr>
<tr>
<td>sex (G)</td>
<td>1</td>
<td>.64</td>
<td>.01</td>
<td>3.69</td>
<td>.43</td>
</tr>
<tr>
<td><strong>Job-seeking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientation (J)</td>
<td>1</td>
<td>2.79</td>
<td>.05</td>
<td>16.26</td>
<td>.10</td>
</tr>
<tr>
<td>T \times G</td>
<td>1</td>
<td>1.03</td>
<td>.02</td>
<td>6.01</td>
<td>.31</td>
</tr>
<tr>
<td>T \times J</td>
<td>1</td>
<td>.61</td>
<td>.01</td>
<td>3.56</td>
<td>.44</td>
</tr>
<tr>
<td>G \times J</td>
<td>1</td>
<td>.40</td>
<td>.01</td>
<td>2.30</td>
<td>.53</td>
</tr>
<tr>
<td>T \times G \times J</td>
<td>1</td>
<td>.33</td>
<td>.01</td>
<td>1.93</td>
<td>.57</td>
</tr>
<tr>
<td><strong>Error</strong></td>
<td>49</td>
<td></td>
<td>(5.82)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Values enclosed in parentheses represent mean square errors.

$R^2 = .65$ (Adjusted $R^2 = .60$)

*p < .05. **p < .01.*
In order to test the second hypothesis, a McNemar symmetry chi-square test was performed with the participants who were assigned to the treatment condition group \((n = 30)\). Among the 31 students in the treatment condition one student left the item blank which asked about posttest job-seeking orientation. Table 11 displays the frequency of pretest and posttest job-seeking orientation of those who received the RIASEC interest inventory and conducted the occupational information search. Three students selected the workplace/company model at the pretest and stayed in the same selection model at the posttest. Four students indicated their preference for the workplace/company model at the pretest, but changed their orientation to the occupational model at the posttest. At the pretest, 16 students answered that they preferred the occupational model, and stayed in the same preference at the posttest. Seven students selected the occupational model at the pretest, but changed their orientation to the workplace/company model. The McNemar chi-square test did not find a statistically significant asymmetrical change in the proportion of subjects who switched their job-seeking orientation before and after receiving the RIASEC interest inventory and conducting the occupational information search, \(\chi^2(1, n = 30) = .364, p = .547\). Therefore, the null hypothesis was not rejected.
Table 11

Frequency of Pretest and Posttest Job-seeking Orientation for the Subjects in the Treatment Condition

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Workplace</th>
<th>Occupational</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workplace</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Occupational</td>
<td>7</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>
Supplemental Analyses

Unfortunately, hypotheses testing in the previous section did not obtain any statistically significant findings. This section provides a supplemental statistical analysis with the attempt being to understand the effect of Holland’s (1997) RIASEC inventory on the Japanese high school students’ vocational identity.

In order to understand who benefited from the RIASEC inventory, the researcher took the following steps and conducted the statistical analyses. First, the gain scores of vocational identity were calculated by subtracting the pretest MVS score from the posttest MVS score. Second, the Pearson product-moment correlations between the gain score and the scores on the RIASEC inventory were obtained for the treatment group (Appendix O). A medium-large significant correlation ($r = .45$) at .011 alpha was found between the gain score and the score of interest in Investigative ($n = 31$). Third, the subjects were divided into high Investigative (standard score of 50 to 100) and low Investigative (standard score of 0 to 49) groups.

Last, a 2 (treatment condition) × 2 (low vs. high Investigative) ANCOVA was performed on the posttest MVS score ($n = 56$). Among the 58 students who completed posttest MVS, two students in the control condition did not return the interest inventory after completing the posttest MVS and were excluded from the analysis. Table 12 shows the means and standard deviations of the pretest and posttest MVS scores. Pretest MVS scores were incorporated as a covariate.
Table 12

Descriptive Statistics of Each Cell for 2 × 2 ANCOVA (Treatment Condition × the Level of Interest in Investigative) (n = 56)

<table>
<thead>
<tr>
<th>Cell</th>
<th>Pretest MVS</th>
<th>Posttest MVS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unadjusted</td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>M   SD</td>
</tr>
<tr>
<td>T &amp; Low I</td>
<td>9 (16.07)</td>
<td>8.78 4.89</td>
</tr>
<tr>
<td>T &amp; High I</td>
<td>22 (39.29)</td>
<td>6.50 3.42</td>
</tr>
<tr>
<td>C &amp; Low I</td>
<td>12 (21.43)</td>
<td>7.92 2.54</td>
</tr>
<tr>
<td>C &amp; High I</td>
<td>13 (23.21)</td>
<td>6.69 4.03</td>
</tr>
</tbody>
</table>

*Note. T = treatment condition, C = control condition, Low I = low level of interest in Investigative, High I = high level of interest in Investigative.*
Before performing an ANCOVA, the assumptions tests were conducted. The first assumption of independent data is met as previously discussed. The second assumption of the normal distributions of scores was tested by looking at skewness and kurtosis of each cell and performing the normality tests. In the pretest MVS score, the treatment group with a low Investigative group \((n = 9)\) had a kurtosis of \(-2.062\), but both Kolmogorov-Smirnov and Shapiro-Wilk tests of normality did not indicate statistically significant deviation from normality, \(p = .200\) and \(p = .104\) respectively. The treatment condition with the high Investigative group \((n = 22)\) had a skewness of 1.13 and kurtosis of 1.63. Kolmogorov-Smirnov test of normality also indicated the deviation from normality for this group, \(p = .030\), but the Shapiro-Wilk test did not, \(p = .075\). Other groups’ skewness and kurtosis were within the range of \(-1\) to \(1\). The two normality tests did not show significant deviation from normality.

In the posttest MVS score, the control group with the low Investigative type had a skewness of 1.393 and a kurtosis of 1.918. Both Kolmogorov-Smirnov and Shapiro-Wilk tests of normality showed a statistically significant deviation from normality, \(p = .011\) and \(p = .045\), respectively. The control group with the high Investigative type had a kurtosis of \(-1.511\), but the Kolmogorov-Smirnov and Shapiro-Wilk normality tests did not indicate a statistically significant deviation from normality, \(p = .200\) and \(p = .323\), respectively. The other two groups’ skewness and kurtosis were within the range of \(-1\) to \(1\). The two tests did not find statistically significant deviations from normality. Therefore, the second assumption of normal distribution of scores was only partially met.
To test the third assumption of homogeneity of variance assumption, Levene’s test of equality of error variances, was performed. There were no statistically significant differences in the variances among the four groups, \( F(3, 52) = 2.376, p = .081 \). Therefore, this assumption is met. The fourth assumption of linear relationship between the dependent variable and the covariate was also met as discussed previously (see Appendix N for residual plot).

To test the last assumption of homogeneity of regression, SPSS GLM was used. The interaction effects between the pretest MVS score as the covariate and the two independent variables were tested. There were no statistically significant effects for the combinations of the two of them: the treatment condition and the covariate, \( F(1, 6) = .288, p = .594 \), and the level of Investigative interest and the covariate, \( F(1, 6) = .212, p = .647 \). However, there was a statistically significant interaction effect between the treatment conditions, the level of Investigative interest, and the covariate, \( F(1, 6) = 4.099, p = .048 \). Therefore, the homogeneity of regression assumption was close to being met.

Because some violations of assumptions were observed, both the \( 2 \times 2 \) ANCOVA and another statistical test recommended by Tabachinick and Fidell (1996) were performed. With the ANCOVA, there was a statistically significant interaction effect between the treatment condition and high vs. low Investigative interest, \( F(1, 4) = 4.543, p = .038 \). The strength of the association was at .082 partial \( \eta^2 \) (see Table 13). This indicates that approximately 8% of the variance in the adjusted posttest MVS scores is associated with the interaction between the treatment condition and the level of the Investigative interest.
Table 13

2 × 2 Analysis of Covariance for Posttest MVS score (Treatment Condition \times the Level of Interest in Investigative) (n = 56)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>Partial $\eta^2$</th>
<th>MS</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Subjects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Model</td>
<td>4</td>
<td>22.72</td>
<td>.64</td>
<td>128.50</td>
<td>.00**</td>
</tr>
<tr>
<td>Intercept</td>
<td>1</td>
<td>4.29</td>
<td>.08</td>
<td>24.27</td>
<td>.04*</td>
</tr>
<tr>
<td>Pretest MVS</td>
<td>1</td>
<td>85.92</td>
<td>.63</td>
<td>485.99</td>
<td>.00**</td>
</tr>
<tr>
<td>Treatment Cond. (T)</td>
<td>1</td>
<td>.102</td>
<td>.00</td>
<td>.58</td>
<td>.75</td>
</tr>
<tr>
<td>Investigative (I)</td>
<td>1</td>
<td>.50</td>
<td>.01</td>
<td>2.84</td>
<td>.48</td>
</tr>
<tr>
<td>T \times I</td>
<td>1</td>
<td>4.54</td>
<td>.08</td>
<td>25.70</td>
<td>.038*</td>
</tr>
<tr>
<td><strong>Error</strong></td>
<td>51</td>
<td>(5.66)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Values enclosed in parentheses represent mean square errors.*

$R^2 = .64$ (Adjusted $R^2 = .61$)

*$p < .05$. **$p < .01$. 
As discussed above, the homogeneity of regression assumption was violated. This indicated a potential ambiguity in interpreting the results of the ANCOVA (Tabachinick & Fidell, 1996). In such case, Tabachinick and Fidell suggested alternative analyses which utilize difference scores between pretest and posttest in ANOVA.

Following their suggestion, a 2 (treatment condition) × 2 (level of Investigative interest) ANOVA was performed (n = 56). The homogeneity of variance assumption was met for the difference score as indicated by the Levene’s test of equality of error variances, \( F(3, 52) = 1.706, p = .177 \). ANOVA found a statistically significant interaction effect between the treatment condition and the level of Investigative interest, \( F(1, 3) = 4.911, p = .031 \). The strength of association was at .086 partial \( \eta^2 \) (see Table 14). This indicated that approximately 9% of the variance in the difference scores of pre- and posttest MVS was associated with the interaction between treatment condition and the level of the Investigative interest.
Table 14

2 × 2 Analysis of Variance for the Difference Score (Treatment Condition × the Level of Interest in Investigative) (n = 56)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>Partial $\eta^2$</th>
<th>MS</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>3</td>
<td>2.42</td>
<td>.12</td>
<td>14.38</td>
<td>.08</td>
</tr>
<tr>
<td>Intercept</td>
<td>1</td>
<td>.73</td>
<td>.01</td>
<td>4.35</td>
<td>.40</td>
</tr>
<tr>
<td>Treatment Cond. (T)</td>
<td>1</td>
<td>.05</td>
<td>.001</td>
<td>.31</td>
<td>.82</td>
</tr>
<tr>
<td>Investigative (I)</td>
<td>1</td>
<td>1.30</td>
<td>.02</td>
<td>7.71</td>
<td>.26</td>
</tr>
<tr>
<td>T × I</td>
<td>1</td>
<td>4.91</td>
<td>.09</td>
<td>29.12</td>
<td>.031*</td>
</tr>
<tr>
<td>Error</td>
<td>52</td>
<td></td>
<td></td>
<td>(5.93)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent mean square errors.

$R^2 = .12$ (Adjusted $R^2 = .07$)

*p < .05.
The present study, unfortunately, did not obtain a large enough sample size \((n = 136)\) to detect the medium effect size with an alpha level of \(.05\) and a power of \(.80\) set a priori. No statistically significant findings for the hypotheses may have been due to the small sample sizes and small effect size. The supplementary analyses were performed in order to evaluate the effect of receiving Holland’s (1997) RIASEC inventory and an occupational information search with a small sample size and to gain an insight into the future research in predicting the effect size of this intervention.

The dependent \(t\) test was performed on the students in the treatment condition \((n = 31)\) in order to see if there was a statistically significant increase in their vocational identity score. The dependent \(t\) test requires the following assumptions to be met:

(a) independent data; (b) homogeneity of variance; and (c) normal sampling distribution. The first assumption of independent data is met as discussed previously. The second assumption of homogeneity of variance was met as indicated by \(F = 1.15, p > .05\). To test the third assumption, two normality tests were performed. Kolmogorov-Smirnov and Shapiro-Wilk tests of normality indicated a statistically significant deviation from normality in the pretest MVS score at \(.004\) and \(.013\) alpha, respectively. However, the skewness and kurtosis of both the pretest and posttest MVS scores were within -1 to 1, which indicated a normal distribution. Thus, the third assumption is considered partially met. The \(t\) test revealed a statistically significant difference between the pretest and posttest MVS scores, \(t (30) = 2.038, p = .05\), with a small-medium effect size, \(d = .366\). The students who received the RIASEC inventory and conducted the occupational
information search increased their vocational identity score from pretest ($M = 7.16, SD = 3.96$) to posttest ($M = 8.02, SD = 3.70$).

In addition, each 18 item in the MVS was analyzed to see if there were any items which had significant gain from pretest to posttest. The dependent $t$ tests were performed for each item in both treatment group and control group. The control group did not have any item which significantly increased from pretest to posttest. The treatment group had two items which had a statistically significant gain after taking VRT and searching occupational information. Item number four, which asks if participants know their own strengths and weaknesses, had a statistically significant increase from pretest ($M = .29, SD = .46$) to posttest ($M = .65, SD = .49$), $t (30) = 4.062, p = .000$, with a medium-large effect size, $d = .73$. Item number 16 asked if they knew about themselves in the various aspects of their lives. The students also increased the score of this item from pretest ($M = .48, SD = .51$) to posttest ($M = .71, SD = .46$), $t (30) = 2.244, p = .032$, with a medium effect size, $d = .49$.

**Summary**

This chapter presented the demographic characteristics of subjects, the analysis of the measurement’s reliability, the results for testing the assumptions of ANCOVA, and the analyses of two hypotheses. It also reported the results of the supplemental statistical analyses.

Demographic characteristics demonstrated that the subjects were suitable for testing the effect of Holland’s (1997) theory on Japanese students in terms of their temporal residency in the U.S. and their future plans to look for employment
opportunities in Japan. However, the sample size obtained for this study was smaller than
the preplanned size to detect a medium effect size with an alpha level of .05 and a power
of .80. The results of the reliability of the MVS Japanese version revealed an acceptable
level of internal consistency. Examinations of the assumptions of ANCOVA indicated
there were some violations in the normality tests. This makes the interpretation of
statistical significance somewhat ambiguous, if the significance level is at the borderline
of rejection and non-rejection. The ANCOVA revealed there were no statistically
significant effects for any main and interaction effects. The first null hypothesis was,
therefore, not rejected. McNemar symmetry chi-square test also did not find statistical
significance, and the second null hypothesis was not rejected.

Supplementary analyses were performed to understand the effects of taking the
RIASEC inventory and conducting an occupational information search by analyzing
other variables which were not included in the hypothesis a priori. A Pearson
product-moment correlation revealed a statistically significant relationship between the
difference scores of pre- and posttest vocational identity and the scores of Investigative
interest. The ANCOVA and ANOVA revealed there were statistically significant
interaction effects between the treatment condition and the level of Investigative interest.
A dependent *t* test was also performed as a supplementary analysis in order to gain
insight for future research and analyzed the effect of the RIASEC inventory and the
occupational information search. The *t* test revealed there was a statistically significant
positive effect of these activities on Japanese students, but the effect size was somewhat
small. Furthermore, dependent *t* tests were used to analyze each 18 item of MVS and
found statistically significant increase for two items only in the treatment group. One of them asked if students know about their strengths and weaknesses. The other asked if they know about themselves in various aspects of their lives.

Chapter five presents a discussion of the findings. Limitations as well as implications and directions for future research are also discussed.
CHAPTER FIVE

Discussion

This chapter provides the discussion of descriptive and inferential statistics reported in chapter four. These discussions include subject characteristics, experimental design, research hypotheses, and supplemental analyses. Implications, limitations, and recommendations implied by these results are also discussed. Last, the conclusion of the present study is provided.

Subject Characteristics

The sample for this study was recruited through Japanese schools in the U.S. A total of 71 students participated in the study and 58 of them completed pre- and posttest vocational identity assessments which were necessary for the hypotheses testing. This indicates approximately 19% of the students responded to the recruitment letter and 15.5% of them completed all the steps. Thus, the response rate of the present study was very low.

This may be due to the complex processes involved in this study, which required four mail exchanges with the researcher. Another reason could be the demographic of the students who received the recruitment letter. According to the telephone interview with one of the Japanese school principals, Y. Hatakeyama (personal communication, October 31, 2008), conducted after the data collection, the percentage of the students who were temporary residents and permanent residents in each school varies depending on the location of the school. Although there was no official statistic available, he pointed out that in some schools more than 90% of the students were planning to return to Japan,
while other schools might only include 40 to 50% as temporary residents and the rest as permanent residents of the U.S. This might have caused a large number of permanent residents to be excluded from participation in the present study, even though they received the recruitment letters.

The majority of the sample were ninth and tenth graders (75.6%) in their American schools. The nature of supplementary Japanese schools is such that there are more students in grades nine and ten rather than 11th and 12th graders. This is because the academic year of a Japanese school starts in April which is toward the end of the academic year for the American schools that they attended. Moreover, many new high school seniors in Japanese schools are about to graduate from their American schools which results in many of them to quitting Japanese school after the end of 11th grade. In addition, a lot of Japanese schools and supplementary schools in the U.S. do not provide many classes for upper grades. Because high school is not a compulsory education in Japan, the ministry of education places more importance on running elementary and junior high schools in the U.S.

The students in this sample were mostly interested in attaining higher education. Only 1.7% of them indicated no plans to attend college or vocational school, and 5.2% reported that they planned to go to a two-year college or a vocational school. All of the other students indicated that they were planning to attend a four-year college. Considering that 47.2% of the students pursued a four-year college degree in Japan in 2007 (MEXT, 2007), the sample of this study had more college-bound students.
The career aspirations of the participants were fairly suitable for the purpose of the study. The majority of the subjects were temporarily staying in the U.S. with a median stay of about three years and an average of four and a half years. Although the participants were recruited in the U.S., all of them were planning to look for job opportunities in Japan in the future. However, about 30% of them were also considering finding a job in the U.S. Having such career aspirations is not characteristic of the general Japanese population. The view toward developing one’s career might have been influenced by American culture and education in the U.S. Therefore, the results of the present study should be generalized with care.

Experimental Design

The participants in the treatment condition needed to complete several steps and needed to be self-motivated to complete each step by exchanging mail with the researcher. A large loss ($n = 11$) occurred in step 3. This may be accounted for by the relatively larger volume of reading materials and activities in this step which included reading the results and the explanation of their interest inventory, as well as searching occupational information on the internet following the written instructions (Appendices E to I). In the future it would be beneficial to create an experimental design which reduces the dropout rate during the data collection process, perhaps by including incentives or personal contact with the researcher or a counselor.

In terms of the experimental design of the present study, another important aspect was the number of days for the participants in both the treatment and control groups to complete the pretest MVS to posttest MVS. Keeping the completion days
constant for both treatment conditions eliminated time as an extraneous variable which could relate to the increase of the vocational identity score.

The mean number of days from the pretest to the posttest MVS for the treatment group was 37.4 ($SD = 9.71$) and for the control group 34.0 ($SD = 12.35$). An independent $t$ test found no statistically significant difference between these two groups, $t (51) = 1.116$, $p = .27$. The distribution of the control group deviated from the normal distribution, which was indicated by a skewness of 1.2 and a kurtosis of 1.4. This requires careful interpretation of the statistical significance, if the test statistics are near the significance border line. However, the significance level was far from the rejection level, $p = .27$. It appeared safe to conclude that the number of days participants spent between pretest and posttest MVS were the same for the treatment group and the control group.

Research Hypotheses

Cell Size. The first research question tested the effect of three independent variables on the posttest MVS score. There were statistically significant differences in the number of participants in the eight cells, $\chi^2 (7, n = 58) = 16.483, p = .021$. These unequal cell sizes were due to the difference in the participants’ preferences for their job-seeking approach, although another analysis, $2 \times 2$ (job-seeking orientation) crosstab, did not find a significant difference.

Out of 29 female participants, five participants, which is only one sixth of the female students, reported that they preferred the workplace/company model as their job-seeking approach, while 10 of the male participants out of 29 participants, one third of the male students, indicated the workplace/company model as their preferable
approach. This appeared to be a manifestation of sex role expectations in Japan.

Komagawa (2007) and Ishii (1997) reported that the majority of both male and female
workers are employed in a company without specifying their occupations, however,
female workers are considered as peripheral workers in the company as *ippan-shoku* and
engage in subsidiary duties. On the other hand, more male workers are employed as
*sougou-shoku*, which deals with central jobs in the company and are also entitled to
long-term employment. The *workplace/company model* is a very company-dependent
style of career development approach and has more barriers for females. Compared to
47.2% of the high school students in Japan who went to college in the year 2007 (MEXT,
2007), participants in the present study were, however, more college-bound students and,
therefore, were considered as having higher career aspirations. In order to have
meaningful career development throughout their lives, female students may have needed
to avoid the company-dependent career style.

*First Research Hypotheses.* Despite the increase of the mean scores from pretest
to posttest on the MVS, especially among the groups in the treatment condition, a

\[2 \times 2 \times 2\] \ ANCOVA did not find any statistically significant main and interaction effects,
as reported in chapter four. Therefore, none of the null hypotheses for this question were
rejected. There could be several explanations for this finding.

As to the variable of the treatment condition, a possible explanation could be that
there is little practical value in taking the RIASEC inventory and searching occupational
information for Japanese students because the counseling approach based on this theory
might lack universality. However, considering the small increase of the mean scores from
the pretest to posttest MVS scores only among the groups in the treatment condition, 
\[ t(30) = 2.038, \quad p = .05, \]
it seems premature to deny the value of these activities for Japanese high school students. In future research it is recommended to make the activities more valuable to the students, such as adding the help of an expert or the opportunity to discuss their future careers with adults, because in the collectivistic culture students rely more on those adult figures for deciding their career (Hofsted, 1991).

Regarding the other two variables, there could be only a small effect of sex and job-seeking orientation on high school students’ vocational identity development. However, considering that there were some patterns of female students preferring the occupational model to the workplace/company model as shown in the different cell sizes, the job-seeking orientation appeared to relate to the development of one’s vocational identity in some way not tested in the present study.

A more likely explanation seems to be the smaller sample size of the present study rather than the planned sample size. In order to detect statistical significance with a medium effect size and alpha of .05, a minimum of 138 participants were needed. The sample size of the present study \( (n = 58) \) was, unfortunately, below the required level. The possible reasons were discussed earlier in the subject characteristics section in this chapter. Additionally, this study was conducted toward the end of academic year when students were busy completing assignments and taking tests. Another reason may be due to the means of recruitment which relied solely on written material and the use of postal mail.
Besides the small sample size, the effect size seemed to be smaller than the expected level. Mau (1999) investigated the effects of computer-assisted career guidance systems (CACG) and reported the effect of taking the Self-Directed Search (SDS), which is one of the Holland’s (1997) RIASEC interest inventories, on 108 undergraduate students’ vocational identity. The group of students ($n = 13$) who took the SDS and the Career-Decision Making (CDM), which is a computer-assisted instruction on the theory of career decision-making strategy, was reported to have increased their vocational identity measured by the MVS from the pretest score of 12.9 ($SD = 3.8$) to the posttest score of 14.9 ($SD = 3.5$). This gain appeared to have a medium effect size. Although the present study did not teach career decision-making strategies to the participants, it included an occupational information search. It was expected that this activity could replace the effect of the CDM. However, due to the lack of similar research designs with Japanese samples, this estimation of effect size might not have been reasonable. Considering the collectivistic cultural style, replacing this activity with an occupational information search which relied solely on students’ individual work might not have been enough to cause a larger effect. Adding the activity which involved the discussion of their RIASEC results with their significant adults might have increased the effect size as discussed above.

The dependent $t$ test conducted as a supplemental analysis found a smaller effect size than Mau’s (1999) study. This test was performed to see if participants in the treatment condition obtained any benefit by comparing the difference between the pretest and posttest MVS scores ($n = 31$). There was a statistically significant difference between
these two MVS scores, $t (30) = 2.038, p = .05$, but the effect size was small-medium, $d = .366$. This finding seemed to support the benefit of taking a RIASEC interest inventory and searching occupational information for Japanese high school students, however the practical value was somewhat small. This may have been due to the lack of individualized explanation, interpretation, and assistance provided by a counselor in reading the results of the RIASEC types and searching occupational information relative to their RIASEC types.

Whiston, Brecheisen, and Stephens (2003) conducted a meta-analysis on the relationship between career counseling treatment modalities and their effectiveness. They found that career counseling interventions that did not involve a counselor were less effective than other interventions that included counselor-client interactions. They pointed out the difficulties and complexities of experimental design when a study included a counselor-client interaction, but suggested that involvement of a counselor in an experiment would increase the effect size and the practical value of career counseling interventions.

Indeed, counseling is a profession which places primary importance on building a relationship between clients and the counselor. It is considered that this relationship is an important factor that facilitates the client’s personal growth. Although the inclusion of a counselor’s help makes the experimental design complex, in future research counselor educators and researchers are encouraged to test the effectiveness of a particular theory by including the help of counseling professionals. This may lead to the compilation of a body of knowledge in this profession as well as build the credibility of counselors.
Second Research Hypothesis. To test the second research hypothesis a McNemar symmetry chi-square test was performed. There was no statistically significant asymmetrical change in the proportion of subjects who switched their job-seeking orientation before and after receiving the RIASEC interest inventory and conducting an occupational information search, $\chi^2 (1, n = 30) = .364, p = .547$. Therefore, the null hypothesis was not rejected. It was expected that by engaging in those activities, students were forced to use the occupational model approach for their career decision making, which resulted in more students selecting the occupational model approach at the posttest demographic questionnaire. However, the proportion of students who switched their approach occurred in both directions and was not asymmetrical.

This may indicate that the implementation of the career counseling approach based on the occupational model did not force students to abandon the company/workplace model approach, which was driven by the employer who had the power to assign occupations to employees. However, this result could also be due to the small sample size and/or small effect size of the treatment. If the effect size of this intervention increased by adding, for example, a counselor’s help, it may have had a larger impact on more students by changing their job-seeking orientation to the occupational model and less students to the company/workplace model.

Supplemental Analyses

Because the statistical analyses for the research hypotheses did not find any statistically significant findings, the supplemental analyses were performed in order to check if there were any variables associated with the increase of the vocational identity
scores. Among the students who took the RIASEC inventory and searched the occupational information \((n = 31)\), a Pearson product-moment correlations found a medium-large significant correlation \((r = .45, p = .011)\) between the gain score of the MVS and the score of the Investigative interest on the RIASEC inventory.

This result was consistent with the previous research with American college students \((n = 86)\) done by Leong and Morris (1989). They found that among Holland’s (1997) six vocational interests (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) only the Investigative had a small but significant positive relationship with vocational identity. Because Investigative types like to obtain new knowledge, rules, and laws, and take a logical approach to solve problems, this type of person can be considered to obtain benefit from the treatment condition of the present study, which primarily relied on reading the written materials for instructions and an explanation of the RIASEC theory without individualized help from a counselor.

Next, in order to test the effect of taking the RIASEC inventory and searching occupational information on students’ vocational identity scores, a 2 (treatment condition) \(\times\) 2 (level of Investigative interest) ANCOVA was performed. The analysis found a statistically significant interaction effect between treatment condition and the levels of Investigative interest, \(F(1, 4) = 4.543, p = .038\). In addition, a 2 (treatment condition) \(\times\) 2 (level of Investigative interest) ANOVA was performed on the difference scores between the posttest and the pretest MVS. This test also found a statistically significant interaction effect between the treatment condition and the level of Investigative interest, \(F(1, 3) = 4.911, p = .031\).
From these two statistically significant findings, it appeared safe to conclude that there was an interaction effect between the treatment condition and the level of Investigative interest. The students who scored high (standard score of 50 to 100) on the Investigative interest obtained more benefit from taking the RIASEC interest inventory and searching occupational information than those who scored low (standard score of 0 to 49) on this type.

Furthermore, two particular items on the MVS asked students if they understood their strengths and weaknesses as well as self-understanding in many areas of their lives. These two items had statistically significant increases from pretest to posttest. This evidenced the particular usefulness of Holland’s (1997) RIASEC approach in understanding oneself, which is one of the major goals of career education during high school years in the U.S. and Japan as discussed in chapter two.

*Implications*

Due to the limited sample size, little is known from the results of the first research hypothesis. Considering that a dependent *t* test found a statistically significant increase from the pretest to the posttest MVS scores for the participants in the treatment condition, the application of Holland’s (1997) RIASEC approach in career counseling practice appears to be beneficial for Japanese high school students to clarify their vocational identity. Particularly this approach helped high school students to increase their self-understanding with the medium or large effect sizes. Although the effect size of the dependent *t* test for the overall MVS score was small to medium, in an actual counseling practice the presence of a counselor helping students understand the results of
the RIASEC interest inventory may increase the effectiveness of this approach. This is because high school students might not be mature enough to read and understand the results and written materials of the present study as well as to apply those concepts in the documents to their own situation. In addition, the relationship with a counselor could be a factor of their personal growth as discussed above.

The result of the second research hypothesis implies that providing the RIASEC interest inventory as a tool to clarify one’s vocational identity does not force one to abandon the company/workplace job-seeking approach, which is still a core employment custom for at least a majority of male workers (Shibata, 2007). However, this result could also be due to the small sample size and/or small effect size of the treatment as discussed above. Therefore, it is premature to conclude that this career counseling approach had no impact on students choosing their job-seeking orientation.

In the perspective of the person-environment fit theories the work contents of an occupation are viewed as static and stable entities and, therefore, individuals can match their personality types and satisfactory occupations. However, as exemplified by the company/workplace model career development in Japanese corporations as well as competency-based human resource management in the U.S., the work contents of individuals can also be viewed as constantly changing entities, especially in the competitive and rapidly changing business environment of the 21st century. It is important to continuously evaluate the effectiveness of the person-environment fit approach as business and employment practices evolve.
Limitations and Recommendations

Despite the effort to seek cooperation from all Japanese schools existing in the U.S., the present study unfortunately could not obtain a large enough sample size, and resulted in not rejecting the null hypothesis. This is considered as being largely due to this small sample size and the relatively smaller effect size than expected. Future research should make efforts to increase the sample size by providing incentives, help by a counselor, or integrating the RIASEC interest inventory and occupational information search into the regular guidance program in Japanese high schools. Integration of this approach in the school system will enable the researcher to access to a large number of students and makes it possible to provide individual help with a counselor at one or more sites, which was extremely difficult to do with the sample of the present study who were all over the U.S.

In addition, the present study’s experimental design limitations should be considered when evaluating the practical application of a counseling theory. This study relied heavily on written materials to communicate with participants in order to eliminate the counselor’s help as an extraneous variable. Individualized help by a counselor to increase students’ self-understanding, which is a core activity in counseling practices, was not provided. This may have caused the small effect size of the Holland’s (1997) RIASEC approach on the students’ vocational identity.

The use of written materials only might also restrict the response rate for the participants to recruitment letters and the characteristics of the participants who completed all the steps of the present study. The level of the reading and computer
literacy of the students may be higher than the general population. The majority of this study’s sample were college-bound students. This indicates that, compared to the general population, more students in the sample did not need to make their career decisions by the time of high school graduation and were able to delay the need for clarifying their vocational identity.

Moreover, although the participants in the present study were planning to look for employment opportunities in Japan, their experience of living overseas is unique and not regarded as characteristic of the general Japanese population. Their exposure to American culture might have caused the distribution of job-seeking orientation to be skewed to the *occupational model*. Therefore, the results of this study should be generalized with care.

There was also a limitation in the use of measurement. The present study used a categorical question to divide the participants into the *occupational model* or the *company/workplace model*. This resulted in unbalanced cell sizes and caused potential ambiguity of the results in case the significance level was near the borderline. Future research could place the number of participants more evenly by creating a numerical assessment which measures the degrees of these two job-seeking tendencies. This might not be appropriate for college seniors who have already chosen their job-seeking approach. However, high school students are still developmentally in the process of considering both options as their future career. Therefore, making a continuous measurement may be a more appropriate for adolescents.
Another limitation regarding the measurement involved the difficulty in translating the career counseling terminology from English to Japanese to make it understandable to the high school students. For example, in the present study, the term “occupation” was translated into shokugyou, and “job” was shigoto in order to differentiate these two terms. Such translation is common in professional literature. However, it might be difficult or not important for students to differentiate these two terms in the context of the questionnaire provided to them, because these two terms are used interchangeably by many Japanese people. Moreover, shigoto also encompasses the meaning of “career” depending on the context in which this term is used in Japan. Future research should refine the use of Japanese language relating to the career counseling so that researcher and participants can share the same constructs.

Conclusion

The null hypotheses of the first research question stated that there were no main and interaction effects of taking the RIASEC interest inventory and searching occupational information, sex, and job-seeking approach. However, these null hypotheses were not rejected. This may be due to the sample size of the present study which was not large enough to detect the medium effect size with the alpha of .05 rather than the little value of the RIASEC approach. As a supplemental analysis, the dependent t test performed only for the participants in the treatment condition found a statistically significant increase from the pretest to the posttest MVS scores with the small-medium effect size, $d = .366$. Based on this result, a large sample size was required in attempting to understand the relationship between the variables of this first research question. The
sample size was estimated as even larger than the planned sample size of the present study.

It is true that detecting statistical significance with a small effect size by obtaining a large sample size may create another discussion regarding the practical value of using the target theoretical approach. However, the present study eliminated the help of a counselor in order to control extraneous variables, even though providing individualized help is considered to be a counselor’s core work activity. Considering that the supplemental analysis found statistical significance with a small-medium effect size, adding individualized help by a counselor appears to have practical value. In future research, the inclusion of a counselor’s help could increase the effect size and practical value of the research as suggested by Whiston, Brecheisen, and Stephens (2003), and, therefore, is recommended.

The second hypothesis tested whether students were forced to acquire the occupational model as their career development approach after conducting the occupational model oriented activities. The null hypothesis of this research question was not rejected. This indicated that the students changed their job-seeking approach in both directions: occupational model and company/workplace model. In actual counseling practice, informing the choice of the company/workplace model as one’s career development approach may decrease the potential risk of guiding students in one direction in an uninformed manner.

From the results of the overall statistical analyses, there seems to be no harm or large potential risks in providing Holland’s (1997) RIASEC approach for Japanese
students. Although the effect sizes and the type of positive impacts were small and limited, the findings from the supplemental analyses supported the effectiveness of this approach. Therefore, conducting further research in a school setting as a part of guidance curriculum appeared sound and ethical. It is recommended that future researchers obtain a larger sample size to further understand the effect of Holland’s RIASEC approach on Japanese high school students’ vocational identity development.
REFERENCES


Appendix A

Ohio University Consent Form

(Parental Permission and Student Assent Form)

English and Japanese
Ohio University Consent Form

Title of Research: The Effect of Holland's RIASEC interest inventory on the vocational identity development of Japanese high school students.

Researchers: Takashi Ohashi

Your child is being asked to participate in research. For you to be able to decide whether you want your child to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your child's personal information will be used and protected. Once you have read this form and your questions about the study are answered, you and your child will be asked to sign it. This will allow your child participation in this study. You should receive a copy of this document to take with you.

Explanation of Study

This study investigates the effectiveness of a career counseling theory for Japanese high school students. This theory has been widely recognized recently in Japan.

There are four steps in this research. First, Participants will be asked to complete questionnaires regarding their career plan and thoughts. Second, Participants will be asked to take a psychological test. Third the participants will be given the results of the tests along with the lists of occupations that match his/her personality. Participants will also receive written instruction on how to search occupational information based on their results by using internet. Participants will be asked to write what kind of information they will have searched on those websites. Fourth, Participants will be asked to complete questionnaires regarding their career plan and thoughts. All communications will be done by postal mails.

The duration of entire project depends on how quickly you respond to each materials mailed to you, but it may take approximately 30 days to 45 days. Estimated time needed for each steps are as follows:

<table>
<thead>
<tr>
<th>Step</th>
<th>Activity</th>
<th>Time estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Questionnaires on career plan and thoughts</td>
<td>10 to 15 min</td>
</tr>
<tr>
<td>2</td>
<td>Psychological test</td>
<td>About 30 min</td>
</tr>
<tr>
<td>3</td>
<td>Receiving the results of the test. Reading written instruction on using websites. Questionnaire on the occupations s/he searched</td>
<td>About 30 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If you wish, you can spend more time</td>
</tr>
<tr>
<td>4</td>
<td>Questionnaires on career plan and thoughts</td>
<td>10 to 15 min</td>
</tr>
</tbody>
</table>

The Participants who are placed on a wait list will go through the same steps by following order: Step 1, 30 days interval, Step 4, Step 2, and Step 3.]

Risks and Discomforts

The investigator anticipates minimal to no risk by participating in this research and is prepared if potential risk arises. The investigator is a licensed school
counselor and trained to take appropriate steps to protect participant’s psychological well-being.]

Benefits
[ Participants will be able to take psychological tests for free and in their native language which typically cost approximately $10, if they take it individually. Participants will be given the opportunity to understand themselves better and to reflect on their career plan. Participants will be able to learn how to search occupational information based on their psychological test result. Results from this research will help to build on the existing literature within the Counselor Education profession regarding vocational identity development of Japanese high school students and the effect of career counseling intervention. This research will also provide guidance for future research to improve the career counseling systems for Japanese students.]

Confidentiality and Records
[The information collected during this study will be kept confidential and not provided to any third party including Japanese schools which distributed the initial recruitment letters. Participant contact information will be saved on electronic media using a password that only principal researcher will know, and will be used in order to communicate research materials by postal mails. Code numbers will be assigned to identify individuals in the research analysis. 5 years after the date of this signed consent and assent form, personal contact information will be deleted. Written information will be also discarded in a secure manner such as using a shredder. Thereafter, only the code numbers and test data will remain, but no one is able to identify the individual. No identifying information will be included in the final analysis or write up of this project.]

Additionally, while every effort will be made to keep your study-related information confidential, there may be circumstances where this information must be shared with:

* Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;
* Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU;

Contact Information
If you have any questions regarding this study, please contact Takashi Ohashi at taki0084@gmail.com or Dr. Tracy Leinbaugh, Faculty Advisor, at Tracy.Leinbaugh.1@ohio.edu

If you have any questions regarding your rights as a research participant, please contact Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740)593–0664.
Parental Permission Form

By signing below, you are agreeing that:
- you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions
- known risks to your child have been explained to your satisfaction.
- you understand Ohio University has no policy or plan to pay for any injuries your child might receive as a result of participating in this research protocol
- you are 18 years of age or older and the guardian of the research participant
- your child's participation in this research is given voluntarily
- your child may change his/her mind and stop participation at any time without penalty or loss of any benefits to which your child may otherwise be entitled.
- You give permission for your child to participate in this research.

Parent's Signature_________________________________________ Date____________________

Printed Name (parent)_____________________________________

Printed Name (child)_____________________________________

Assent Form for student

By signing below, you are agreeing that:
- you understand the nature of this research project.
- you discussed your participation in this project with your parent(s) or guardian.
- your participation in this research is given voluntarily
- you may change your mind and stop participation at any time without penalty or loss of any benefits to which you may otherwise be entitled.
- you would like to participate in this research

Child's Signature_________________________________________ Date____________________

Printed Name (Child)_____________________________________

Version Date: [3/31/2008]
オハイオ大学 調査研究 参加承諾書・同意書

研究タイトル：ホランドのRIASEC興味検査が日本人高校生の職業アイデンティティ形成に及ぼす効果

研究者：大橋孝史

お子さんが調査研究に参加してくださいようお願い申し上げます。保護者の方に事前内容をご理解いただいた上でお子さんの調査研究への参加を承諾していただくためには、この調査研究の内容、及び考えられるリスクや利益をご理解いただければ幸いです。このプロセスはインフォームド・コンセントとして知られています。この書類には本調査研究の目的、手順、考えられる利益やリスクが記載されています。また、お子さんの個人情報がどのように扱われ、保護されるかを記載されております。この書類をお読みいただき、疑問点などが解消されましら、保護者の方とお子さんに同意をいただけるようお願いいたします。それによってお子さんが本調査研究に参加する承諾をいただきましたことになります。この書類を保管し、調査研究におけるコーポレーションも一部受け取っていただくことになっています。

調査研究の説明

この調査の内容は、キャリア・カウンセリング理論が日本人高校生に対してどの程度有益かを調査するものです。この理論は近年日本でも広く普及してきました。

この研究は4つのステップに分かれています。最初に、参加者には自分の将来の進路に関する質問紙を記入していただきます。2番目に、心理テストを受けていただきます。3番目には、心理テストの結果とその人の興味性格にマッチした職業名のリストを配布させていただきます。また、そのテスト結果を使ってインターネットで職業情報を探すための手引書をお配りします。参加者にはインターネットで様々な職業情報をサーチしたのか用紙に記入していただきます。4番目に自分の将来に関する質問紙を記入していただきます。用紙のやり取りなどはすべて郵便にて行います。

最初から最後のステップまでにかかる期間はステップごとにどれだけ早く返答してくださるかにようとなります。よくも30日から45日程度と予測しています。それぞれのステップに必要なおよそその時間は以下のとおりです。

<table>
<thead>
<tr>
<th>ステップ</th>
<th>内容</th>
<th>およそ所要時間</th>
</tr>
</thead>
<tbody>
<tr>
<td>1回目</td>
<td>現時点での進路・職業選択に関する質問紙</td>
<td>10〜15分</td>
</tr>
<tr>
<td>2回目</td>
<td>心理テスト（興味性格検査）</td>
<td>30分程度</td>
</tr>
<tr>
<td>3回目</td>
<td>心理テストの結果に基づいた、インターネットでの情報収集のやり方。簡単な質問用紙1枚。</td>
<td>30分程度〜たくさんの情報を探した人は30分以上探してくれてもかまわない</td>
</tr>
<tr>
<td>4回目</td>
<td>進路・職業選択に関する質問紙</td>
<td>10〜15分</td>
</tr>
</tbody>
</table>

ランダムに分けられたおよそ半数の参加者はウェイトリストに載せさせいただき、ステップ1・4・2・3の順番で受けいただくことになります。
リスクや不快感
[当研究による参加者のリスクは最小限もしくは無いに等しいと予測されます。何らかの事態が起きた場合も対処できる準備があります。調査者はスクールカウンセラーの免許を保っている、参加者の心理的健康状態を守るために適切な対応ができるよう訓練されています。]

利益
[参加者は母国語で無料の心理テストを受けることができます。このテストは個人で受けると普通100ほど費用がかかります。また、自分をよりよく理解することもできると共に、将来の進路について深く考えることができます。さらに、参加者は自分の心理テストの結果をもとに職業情報をインターネットで探す方法を教すことでもできます。この調査研究の結果はカウンセラーや教育の分野において、日本人高校生の職業アイデンティティ形成やキャリア・カウンセリングの効果に関する、研究成果を築き上げる一方となり、また、今後の日本でのより良いキャリア・カウンセリング・システムの発達に役立てることを目的としています。]

秘密情報
[この調査研究において集められた情報は秘密事項として扱われ、参加募集を配布した日本人学校・補習授業校なども含めた第三者に渡ることはありません。参加者の連絡先は電子媒体に保存され本研究の研究者のみがアクセスできるパスワードを持っています。連絡先は調査用紙などの郵送のために使われますが、データ分析の際は削り捨てられたコード番号を使って分析が行われます。参加者同意書に同意の日付から5年後に個人の連絡先が消去され、書面に残っている連絡先もシュレッダーにかけるなど情報漏れが無いような方法で処分されます。それ以外では、コード番号と調査データだけが残り、個人を特定する情報は誰にもかからないです。個人を特定できるような情報が分析結果報告書（博士論文）や出版物に含まれることはありません。

また、参加者の方のこの調査に関する個人情報が秘密事項として扱われるよう最大限の努力を払いますが、以下のような機関とは情報をシェアしなければならない状況も起こりえます
* 連邦政府関係機関、例、人を対象とした調査研究から参加者の人権を守る責任のある the Office of Human Research Protections や、
* オハイオ大学の代表者、これに含まれるものとして、施設内倫理委員会、オハイオ大学における調査研究を管理監督する委員会があります。]

連絡先
この調査研究に関するお問い合わせは大橋孝史（たかし）までE-mail taki0084@gmail.com もしくは指導教官 Dr. Tracy Leinbaugh（トレインバウ助教授）Tracy.Leinbaugh.1@ohio.edu までご連絡ください。

調査研究の参加者としての人権についてのお問い合わせは、
Jo Ellen Sherow, Director of Research Compliance, Ohio University, (740)593-0664.までご連絡ください。
参加承諾書（保護者用）

私は以下にサインをすることによって、次のことに同意します。
- この調査研究参加同意書を読み（もしくは読んでもらいたい）質問などをする方法や機会がありました。
- お子さんにとってのリスクに関して、納得いく程度の説明がありました。
-  この調査研究のやり方でお子さんを参加させる際の起き得る負傷に関して、オハイオ大学は支払いをする方針・計画は無いことを理解しています。
-  お子さんが18歳以上で、この研究への参加者の保護者です。
- お子さんの調査研究への参加は自由意志によります。
- お子さんが、考えを変え参加をやめたくなった場合は、ペナルティーを受けったり、与えられるはずだった利益を失うことなくいつでもやめることができます。
- お子さんがこの調査研究に参加することを承諾します。

保護者サイン ______________________________ 日付 ____________

保護者氏名 ____________________________________________

生徒氏名 ____________________________________________

参加同意書（生徒用）

私は以下にサインをすることによって、次のことに同意します。
- この調査研究がどういうものか理解しています。
- この調査研究の参加について保護者と話し合いました。
- この調査研究への参加は自由意志によります。
- 考えを変え参加をやめたくなった場合は、ペナルティーを受けたり、与えられるはずだった利益を失うことなくいつでもやめることができます。
- 私はこの調査研究に参加を希望します。

生徒サイン ____________________________________________ 日付 ____________

生徒氏名 ______________

Version Date: [3/31/2008]
Appendix B

Step 1 Instruction

English and Japanese
Thank you very much for your participation in this study.

Please read the following instructions and fill out the documents below.

1. Please write your name, date, and sign the guardian consent form and student assent form on page 3 of the “Ohio University consent form and assent form.” (1 copy is for you to keep)

2. Next, please fill out the “Demographic Questionnaire.”

3. Last, please complete the document “My vocational situation”.

Once you have finished, please return mail to me using the attached envelope (no stamps needed). Make sure to include all three documents: “Ohio University consent form and assent form.” “Demographic Questionnaire.” and “My vocational situation.”

I will send the step 2 materials.

For further information regarding this research project and how to fill out the documents, please feel free to contact Mr. Ohashi.
E-mail: taki0084@gmail.com
Tel: 937-367-7232 Eastern time zone (same as New York)
調査へのご協力ありがとうございます。

ステップ 1 やり方の説明

次に書いてある説明にそって書類の記入をお願いします。

1. 「オハイオ大学 参加承諾書・同意書」の3ページ目、保護者用承諾書と生徒用同意書にサイン・名前・日付を記入してください。（2部のうち1部は参加者保管用です。）

2. 次に、「Demographic Questionnaire」と書かれた質問用紙に記入をお願いします。

3. 最後に、「私の職業状況」という質問用紙に記入をお願いします。

記入がすべて終わりましたら、「オハイオ大学 参加承諾書・同意書」を1部、「Demographic Questionnaire」、「私の職業状況」の3つの書類を同封されている封筒に入れて大橋まで郵便にて送り返してください。（切手は不要です。）

ステップ2の書類を郵送させていただきます。

この調査研究、用紙記入に関するご質問等はお気軽にお橋までお問い合わせください。
E-mail: taki0084@gmail.com
電話：937-367-7232 Eastern time zone （ニューヨークと同じ）
Appendix C

Pretest Demographic Questionnaire

English and Japanese
Demographic Questionnaire

Please answer following questions.

A. Gender  Male ___  Female ___

B. Grade level in American school (if you attend) _______

C. Length of stay in the U.S. _______year_______month

D. Circle the country where you wish to do your job hunting. (Circle all that apply.)
   ( Japan  /  the U.S.  /  others )

E. To obtain a job that you wish to do in the future, which of the following approaches would you like to take? Please indicate the number either (1) or (2).

   (1) First I would like to decide on a company or organization I would wish to work for. Then I will work on various jobs assigned to me and develop my career within the company or organization. That is to say, deciding on the desired workplace is more important than specifying the desired occupation.

   (2) First I would like to decide on an occupation that I like. Then I will look for a workplace where I can do this particular job and develop my career based on this occupation. That is to say, deciding on the desired occupation is more important than the organization where I will do this job.

F. About your career, please indicate which of the following statements, (1) or (2), closely represents your current thoughts.

   (1) First I would like to choose an industry (e.g.: manufacturer, trading firm, financial industry, mass media, and government, etc) where I want to work. Then, I would like to engage in various occupations in the industry.

   (2) Regardless of the type of industries (e.g.: manufacturer, trading firm, financial industry, mass media, and government, etc), I would like to engage in the occupation which utilizes the skills and abilities I possess (or I am going to acquire).

G. About your career, please indicate which of the following statements, (1) or (2), closely represents your current thoughts.

   (1) I would like to work in a popular and well-known company or organization, even though sometimes I may be assigned to the department which I do not want to work in.

   (2) If I can do the kind of jobs that I want to do, I don’t care much about the name recognition of the company or organization.
H. Circle which school(s) you go. Cram schools are not included. (Circle all that apply.)
(American school / Japanese supplementary school / full-time Japanese school / others)

I. Circle your career or educational plan after graduating high school. (Circle all that apply.)
(work / vocational school / 2-year college / 4-year college / others)

J. Considering Japanese economy, how concerned are you about your future? Select only one answer from the following (1) to (5) statements.
(1). I am not concerned at all.
(2). I am not concerned.
(3). Neutral.
(4). I am concerned.
(5). I am very concerned.
Demographic Questionnaire

次のA〜Jの質問にお答えください。

A. 性別  男  女

B. 現地校での学年（通っている場合のみ） 年生

C. 濃厚年数  年  か月

D. 将来、就職活動を行う予定の国を丸で囲んでください。（2つ以上でもかまいません）

( 日本 / アメリカ / その他 )

E. 将来の仕事や職場を選ぶ際に、次の二つのうちどちらのアプローチをとりますか？今現在の自分の考えにより近いほうを（１）か（２）のどちらか一つだけ選んで丸で囲んでください。

(1). まず自分が働きたいと思う会社や組織を決め、職種に沿った様々な仕事をしてキャリアを積んでいく。

(2). まず自分が働きたい職業・仕事内容・職種を決め、そしてそれができる職場を探しキャリアを積んでいく。

F. 仕事について、今現在の自分の考えにより近いほうを（１）か（２）のどちらか一つだけ選んで丸で囲んでください。

(1). 働きたい業種（メーカー、商社、金融、マスコミ、官公庁など）選び、その業界で自分にできることなら色々な仕事をしてみたい。

(2). 業種（メーカー、商社、金融、マスコミ、官公庁など）にこだわらず、自分が持っている（これから身につけられる）能力や知識を主に使っているような仕事をしていきたい。

G. 仕事について、今現在の自分の考えにより近いほうを（１）か（２）のどちらか一つだけ選んで丸で囲んでください。

(1). 時には希望通りの部署に配属されなくてもいいが、人気の高い有名な企業や組織で働きたい。

(2). 自分に合った仕事、やりたい仕事ができるなら企業や組織の知名度はあまり関係ない。

裏につづく。
H. 通っている学校を丸で囲んでください。塾は含みません。（2つ以上でもかまいません）
( 現地校 / 補習授業校 / 全日制日本人学校 / その他 )

I. 高校卒業後の進路希望を丸で囲んでください。（2つ以上でもかまいません）
( 就職 / 専門学校 / 短大 / 4年制大学 / 4年制大学と大学院 / その他 )

J. 日本の経済状態などをふまえ、自分の将来の進路についてどの程度心配していますか。（1）〜（5）
のうち当てはまるものを一つだけ選んで丸で囲んでください。

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>まったく心配していない</td>
<td>あまり心配していない</td>
<td>どちらともいえない</td>
<td>やや心配だ</td>
<td>とても心配だ</td>
</tr>
</tbody>
</table>
Appendix D

Step 2 Instruction

English and Japanese
Thank you very much for sending me the step 1 documents. This time is step 2.

**Step 2 ** Instruction

Please fill out the bubble sheet after reading the instruction.

1. Please read carefully from the page 3 of the “Vocational Readiness Test [3rd Ed.] Question Packet.” Fill out your answer on the bubble sheet either using either a “0”, “X”, or “_”. Please fill out the area highlighted in yellow. Ignore the back page of the bubble sheet. (The bubble sheet is the document written as “Vocational Readiness Test [3rd Ed.] Answering Sheet.”)

Once you have completed the document send the front page of the bubble sheet to Mr. Ohashi with the attached envelop (no stamps needed). You may fold the sheet.

As soon as I receive your answer sheet, I will send your results and the documents for Step 3.

For further information regarding this research project and how to fill out the documents, please feel free to contact Mr. Ohashi.
E-mail: taki0084@gmail.com
Tel: 937-367-7232 Eastern Time Zone (same as New York)
ステップ1の書類郵送ありがとうございました。今回はステップ2です。

ステップ2 やり方の説明

次に書いてある説明を読んでマークシートへの記入をお願いします。

1. 「職業レディネス・テスト [第3版] 問題用紙」と書かれた冊子の3ページ目からをよく読み、マークシートの表側に、質問に対する回答を○か×または□で記入してください。黄色のハイライトで囲まれた部分だけ記入してください。裏面の換算表も関係ありません。

（マークシートは「職業レディネス・テスト [第3版] 回答用紙」と書かれた紙です。）

マークシート表面の記入が終わりましたら、マークシートだけを同封されている封筒に入れて大橋まで郵便にて送り返してください。折り曲げてもかまいません。（切手は不要です。）

受け取り次第、今回のテストの結果とステップ3の書類を郵送させていただきます。

この調査研究、用紙記入に関するご質問等はお気軽に大橋までお問い合わせください。
E-mail: taki0084@gmail.com
電話：937-367-7232 Eastern time zone （ニューヨークと同じ）
Appendix E

Step 3 Instruction

English and Japanese
Step 1 Step 2 Step 3 Step 4

Thank you very much for sending back the documents for step 2. The 3rd Step is the next to be completed.

Step 3 Instructions

By following the instructions provided below, let’s look for the occupational information that will interest you.

1. Please read carefully the front and back of the document: indicated as “The Result of Your Vocational Readiness Test.” (About your RIASEC code)

2. Please look at the occupational titles in the “list of occupational titles and code” and look for ones which have a similar RIASEC code to yours and that is attractive to you.

3. Next, read the instructions on the document titled Career Matrix And search for occupational information that interests you on the website.

4. The document titled O*Net explains how to search for information in the English website. This is also very helpful and I encourage you to try this if you are interested.

5. Please fill out the yellow document titled “Occupational Information You Searched for.” Write down what you searched for on Career Matrix or O*Net. Make sure to fill out all of the blanks.

Once you have completed this task, please only post this yellow sheet with the envelope provided (no stamps required).

As soon as I receive your documents, I will send the documents for step 4.

For further information regarding this research project and how to fill out the documents, please feel free to contact Mr. Ohashi.
E-mail: taki0084@gmail.com
Tel: 937-367-7232 Eastern time zone (same as New York)
ステップ2の書類郵送ありがとうございました。今回はステップ3です。

ステップ 3 やり方の説明

次の順序で、説明にそって興味のある職業について調べてみましょう。

1. 「職業レディネス・テストの結果」と書かれている用紙の表・裏をよく読んでください。（自分のRIASECコードについて）

2. 同封されている「職業コード一覧」の中から、あなたのRIASECコードに似た職業で興味の持てそうなものがあるか探してください。

3. 次に Career Matrix と書かれた用紙を見ながら気になる職業に関する情報をインターネットで調べてください。

4. O*Net と書かれた用紙は英語での検索の仕方ですが、役に立ちますので興味のある人はぜひ活用してみてください。

5. 「情報をしらべた職業記入用紙」という黄色い用紙にCareer Matrix や O*Net で自分が調べた職業情報を記入してください。記入もれのないようにお願いします。

記入が終わりましたら、この黄色い用紙だけを同封されている封筒に入れて大橋まで郵便にて送り返してください。（切手は不要です。）

受け取り次第、最後のステップ4の書類を郵送させていただきます。

この調査研究、用紙記入に関するご質問等はお気軽に大橋までお問い合わせください。
E-mail: taki0084@gmail.com
電話：937-367-7232 Eastern time zone（ニューヨークと同じ）
Appendix F

The Results of Vocational Readiness Test

English and Japanese
The Result of Your Vocational Readiness Test  
[Your RIASEC code]

This is the result of your Vocational Readiness Test which you completed previously.  
This test measures your occupational interest and confidence in six areas (R·I·A·S·E·C). This will help you understand what kind of occupational categories you are interested in and/or confident about.

See the back of this page for your scores in each area.

The higher scores indicate you have strong interest or confidence in that area. Your RIASEC code is in the order of your highest three interest areas placed from left to right.

Your RIASEC codes are

| Interest | | | |
| Confidence | | | |

The combination of these three letters is your code which indicates your interest and confidence, and it is conceptualized as your personality.

Various occupations in the world of work are also categorized by the combination of these three interest areas. This categorization makes it possible for you to search occupational titles which have the same or similar RIASEC code as yours. This will help you to narrow down and make your occupational choices.

Holland who developed this categorization argues that people who have jobs that match their interest tend to be satisfied with their job and have a greater possibility to succeed in their career. This theory is one of most popular and accepted career counseling theories in the U.S.

Please look at the enclosed packet. It lists the occupational titles that have the same as or similar RIASEC code as yours.

Next, let's look for various occupational information on websites featuring these occupational titles.
<table>
<thead>
<tr>
<th>Area</th>
<th>Characteristics</th>
<th>Your Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Realistic</td>
<td>Interest</td>
</tr>
<tr>
<td></td>
<td>Like to engage in the realistic activities involving machine or things.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Person who have high score in this area have following tendencies.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Very interested in machine and things.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Like to operate machines and build things, and are talented in such activities.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Does not like jobs dealing with people.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The examples of occupations in this area include:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupations deal with plants and animals, management of machines, engineering, artisan and craftsman, operating machines.</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Investigative</td>
<td>Confidence</td>
</tr>
<tr>
<td></td>
<td>Like to engage in the activities involving research and investigation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Person who have high score in this area have following tendencies.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Have strong interest in abstract ideas.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Like to think logically, or handle things mathematically.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Not very good at directing and leading people.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Like to accomplish things by his/herself, does not like group activities.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The examples of occupations in this area include:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupations related to natural science, information technology, industrial engineering, social research, medicine, mathematics and statistics.</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Artistic</td>
<td>Interest</td>
</tr>
<tr>
<td></td>
<td>Like to engage in the activities involving music, arts, literature.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Person who have high score in this area have following tendencies.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Have strong interest in music, arts, literature.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Talented in creativity and imagination.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Place importance on one’s intuition rather than rules and customs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The examples of occupations in this area include:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupations related to arts, sculpture, crafts, dance, literature, design, illustration, music, and drama, and producer.</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>Social</td>
<td>Confidence</td>
</tr>
<tr>
<td></td>
<td>Likes to engage in activities involving working with people and help others.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Person who have high score in this area have following tendencies.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Have strong interest in teaching people or helping people.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Like to work with people.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Talented in the abilities to understand people’s feelings and to become close with others.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The examples of occupations in this area include:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupations related to education in school and society, social welfare, medicine, health, various services that involve serving people, and sales.</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Enterprising</td>
<td>Interest</td>
</tr>
<tr>
<td></td>
<td>Likes to engage in activities involving working with creating new projects and leading organizations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Person who have high score in this area have following tendencies.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Like to engage in activities to create new plan, make business plan, establish organization, or lead organization.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prefer taking leadership role to following others.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tend to be active, have abilities to lead and socialize with others.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The examples of occupations in this area include:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupations related to business management, public relations and advertisement, sales, journalism, and finance.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Conventional</td>
<td>Confidence</td>
</tr>
<tr>
<td></td>
<td>Like to follow rules and established ways to do things.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Person who have high score in this area have following tendencies.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Like clerical work.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Value rules and customs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Like to follow others directions rather than leading others.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Adaptable to and collaborative in various situations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tend to be punctual and persistent.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The examples of occupations in this area include:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupations related to accounting, security, clerical work, legal work, and editoring.</td>
<td></td>
</tr>
</tbody>
</table>
職業レディネス・テストの結果
[あなたの RIASEC コード]

前回記入していただいた、職業レディネス・テストの結果をお知らせいたします。
このテストは、あなたの職業に関する興味関心や自信度をそれぞれ6つの領域（R・I・A・S・E・C）について測るもので、これによってどんな職業領域に自分は強い興味・自信を持っているのかがわかります。

各領域の説明とあなたのスコアは裏面をご覧下さい。

スコアの高い領域があなたの興味・自信の強い職業領域です。このスコアの高い上位3つの職業領域を左から順に並べたものがあなたの RIASEC（リアゼック）コードです。

あなたの RIASEC コードは、

興味・関心 ＿＿＿＿ ＿＿＿＿ ＿＿＿＿ です。

自信 ＿＿＿＿ ＿＿＿＿ ＿＿＿＿ です。

このRIASEC領域の3つの組み合わせが、あなたの興味・自信の強い分野を示したコードであり、これがあなたの性格になっている（なりつつある）ともいえます。

また、同じように世の中に存在するさまざまな職業もこの3つの領域の組み合わせで分類表示することができます。これによってあなたの RIASEC コードと同じ、もしくは似ている RIASEC コードを持つ職業を探すことができ、職業選択の際に自分に合った仕事を探す大きな手がかりとなることができます。

この分類方法を開発したホランドは、人は自分の興味関心に合っている職業に就けば、仕事から得る満足感も高く、その仕事で成功する可能性も高くなると主張しており、この理論はアメリカで最も有名で広く受け入れられているキャリアカウンセリング理論の一つです。

あなたの RIASEC コード、もしくはそれに近いコードを持つ職業名一覧は裏面の別紙をご覧下さい。

次のステップとして、この職業名一覧をもとにインターネットでいろいろな職業に関する情報を探してみましょう。
<table>
<thead>
<tr>
<th>領域名</th>
<th>説明</th>
</tr>
</thead>
</table>
| **R** Realistic 現実的領域 | 機械や物を対象とする具体的な活動をすることが好き。この選択の高い人は、次のような傾向を示す可能性が高い。
- 機械や物に対する関心が高い。
- 機械を操作したりする作業が好き。
- 再現的な仕事が好き。
この職業領域には、たとえば次のような職業が含まれる。
- 新材料開発の職業、実験技術者の職業、機械開発の職業、製造技術者の職業、機械・製造工程の職業。

| **I** Investigative 研究的領域 | 研究や調査などの活動をすることが好き。
- この選択の高い人は、次のような傾向を示す可能性が高い。
- 抽象概念に強い関心をもつ。
- 論理的大きな傾向を示す。
- 約束やマラソンをよくする。
この職業領域には、たとえば次のような職業が含まれる。
- 自然科学関係の職業、情報処理関係の職業、生産技術関係の職業、社会調査関係の職業、数学・統計関係の職業。

| **A** Artistic 芸術的領域 | 音楽、美術、芸術など芸術的な活動をすることが好き。
- この選択の高い人は、次のような傾向を示す可能性が高い。
- 音楽、美術、文学など芸術に強い関心をもつ。
- 再現的な仕事が好き。
- メテオロジー・気象関係の職業、建築関係の職業、デザイン・イラスト関係の職業、音楽関係の職業、演出・演出関係の職業。

| **S** Social 社会的領域 | 人に関わり、奉仕的な活動をすることが好き。
- この選択の高い人は、次のような傾向を示す可能性が高い。
- 人に親しみ、人を理解することに強い関心をもつ。
- 人と一緒に活動することに興味がある。
この職業領域には、たとえば次のような職業が含まれる。
- 学校教育・社会教育関係の職業、社会福祉の職業、医療・保健関係の職業、一般の人権保護の職業。

| **E** Enterprising 企業的領域 | 新しい企画を考えて、組織を動かすような活動が好き。
- この選択の高い人は、次のような傾向を示す可能性が高い。
- 新しい計画を立て、それを実行する。
- 組織を動かすような活動が好き。
- 他人に従わずに、自分のリーダーシップを発揮する。
この職業領域には、たとえば次のような職業が含まれる。
- 企業管理関係の職業、営業・販売関係の職業、財務関係の職業。

| **C** Conventional 慣習的領域 | 一定の枠組みに沿って、手続きに従って活動することが好き。
- この選択の高い人は、次のような傾向を示す可能性が高い。
- 事前計画を立て、従来の手続きに従って活動する。
- 自分のリーダーシップを発揮する。
- 一定の状況に対して順応的、協調的である。
この職業領域には、たとえば次のような職業が含まれる。
- 総務事務関係の職業、警備関係の職業、一般事務関係の職業、管理関係の職業、懇親・親善関係の職業。
Appendix G

Career Matrix Instruction

English and Japanese
Based on your result of the Vocational Readiness Test, Let’s gather occupational information that interests you

A home page called “Career Matrix” has various occupational information.

Go to http://cmx.vr4sys.net

Next, find the “search occupations” button in the top page.

The linked page has a “free word search” function. Type in the occupations that is the same or similar to your RIASEC code, and read the occupational information.

Occupational titles listed in the provided packet and the occupational names used in this website may not be the same. Try a similar word or just a part of the occupational title when you search.

Please email me any questions at taki0084@gmail.com or call me on 937-367-7232.
職業レディネス・テストの結果をもとに気になる職業について情報を集めましょう

まず、Career Matrixというホームページに様々な職業に関する情報が載っているので、http://cmx.vrmsys.netにアクセスしてください。

次に、トップページの中から職業検索ボタンを押してください。

リンク先のページの「フリーワード検索」であるのRIASECコードと同じ、もしくはそれに近い職業コードを持つ職業の中から、自分が興味のある職業名を入れて、いろいろな職業に関する情報を読んでみましょう。

職業コードに記載されている職業名とこのサイトで使われている職業名とが必ずしも一致することは限らない、似た言葉を入れてみたり、職業名の一部分を入れてみたり、いろいろ試してみてください。

何かご質問等ある場合は email: takii0084@gmail.com / TEL: 937-367-7232 大橋までお問い合わせください。
Appendix H

O*Net Instruction

English and Japanese
For those of you who want to search for more occupational information using your RIASEC code

* This activity requires some English. This activity is optional if you found enough information from Japanese websites and Career Matrix.

Unfortunately, in comparison to the U.S., there is no website in Japan which provides a comprehensive and reliable source of occupational information. Furthermore, you cannot search occupations using your RIASEC code. In this packet, I would like to introduce a website called O*Net which was created by the U.S. dept. of labor. On this website you can type in your RIASEC code and search occupations that matches your interest.

You can use a dictionary to translate occupation you have found into Japanese, and then search the same occupation on Japanese websites such as Career Matrix or Google. If you are comfortable reading English, you can go ahead and read the information on the O*Net. There are much useful information on this website. Just keep in mind that not all of this information can be directly applied to Japan.

1. Go to the website called O*Net
   The address is:  http://online.onetcenter.org

2. Chose “Find Occupations” from the top page.

3. In the linked page, find “O*Net Descriptors,” and click “Interests”
1. Interests folder shows contents, just click any of them. Doesn't matter which one you click. You can change the linked page later on.

2. Choose your RIASEC code from the drop down menu. This part

For example, if your RIASEC code is [ ERS ].

Choose 1st E, 2nd R, 3rd S and click Go button.
The search result look like below.

The occupational titles listed here are not limited to ERS. Similar ones are also listed, such as SRE or ESR. If you are interested in any of those occupations, of course you can access this information. If you get limited results, you don't need to stick to your exact RIASAC code. You can type in a similar code or just the first two letters of your code. You can experiment with this.

If you would like to narrow down the search result, use this dropdown menu to limit your options. For example you can limit by ERS only.

Let's limit the result by ERS only. You will find occupations in the exact order of this code. However, you do not need to insist on your exact RIASAC code. Try many different code orders and search for occupations that look interesting to you.

If you find an interesting occupation, use your dictionary to translate it into Japanese. You can look for this occupation on the Japanese website such as Career Matrix. If you click the link you can find occupational information in English and be able to obtain lots of useful information which are not found on Japanese websites.

The above example is about a sales representative who deals with computers. The linked page lists the nature of this occupation, what kind of knowledge and skills are needed, what kind of person matches this occupation, wages, etc. This information are is very informative and useful even if you want to do the same job in Japan.
In addition, another dropdown menu indicated as Job Zone is to limit your search by educational and/or training level (high school, college, graduate school, etc).

Job Zone 1 – occupations that need little or no preparation
Job Zone 2 – occupations that need some preparation
Job Zone 3 – occupations that need medium preparation
Job Zone 4 – occupations that need considerable preparation
Job Zone 5 – occupations that need extensive preparation
自分の RIASEC コードを使ってもっといろいろと
自分にあった職業情報を探してみたい方のために

※ ここでは多少英語を使いますので、日本語のサイト Career Matrix だけで十分な情報が得られたと思われる方は必ずしもやらなければならないわけではないというわけではありません。

残念ながら、アメリカと比べると日本には信頼できる職業情報が数多くの揺れてるウェブサイトは今のところありません。また、RIASEC コードを使って職業を検索することもできません。そこで、ここでは O*Net というアメリカの労働省のホームページに自分の RIASEC コードを入れ、自分の興味にあった職業名を検索する方法をご紹介します。

検索した職業名を辞書などで調べ日本語のウェブサイト（Career Matrix や Google など）で探してみましょう。また、英語に自信のある人はそのまま英語で読んでもみましょう。様々な職業について詳しく書かれているので役に立つ情報も多いと思います。ただ、あくまでもアメリカでの情報なのですべてが日本でも当てはまるとは限らないということを理解しておいてください。

① まず、O*Net というホームページにアクセスしてください。アドレスは http://online.onetcenter.org です。

② 表示されたトップページから Find Occupations を選んでください。

③ リンク先のページを下の方にある O*Net Descriptors の中から Interests というリンクをクリックしてください。
① Interests フォルダの中身が表示されたら、どれでも良いので一つクリックしてください。

どれでもいいので一つクリック。どれを選んでも次のリンク先で変更できるのでとりあえずでかまいません。

⑤ ドロップダウンメニューで自分のRIASECコードを選んでください。

たとえばあなたのRIASECコードが[ERS]なら。

1stにE 2ndにR 3rdにSを選んでGoボタンをクリックしてください。
こんにちは、検索結果が表示されます。

ここに表示されている職業名は ERS に限らず、それに近いコードの職業も含まれています。例えば SRE は ESR に含まれています。この中でも興味のある職業があればもろもろそれについて情報を探してみましょう。検索結果が多く出る場合もありますが、少し出ない場合もあります。その場合は自分の RIASEC コードにこだわらず、似たコードを入れたり、コードを 2 文字だけ入れるなどいろいろ試してみてください。

もっと絞り込みたい場合はドロップダウンメニューから ERS のみを選んで表示することも可能です。

では実際に ERS だけで絞り込んでみましょう。そうするとコードの順番が ERS の職業のみ表示されます。しかし興味検査でわかった自分の RIASEC コードのみにとられる必要はありません。似たような並び方をいろいろと試して興味のある職業があるかどうか探して見ましょう。

気になる職業があったら辞書で日本語の職業名を調べて、Career Matrix など日本語のウェブサイトで情報を探してみましょう。また、リンク先をクリックすれば英語ですが日本のホームページでは得られない有益な情報が豊富に載せられています。

上の例はコンピュータ機器を扱う営業マンです。リンク先にはどんなことをする仕事なのか、どんな知識やスキルが必要か、どんな性格・興味を持った人にお向いているのか、どんなトレーニングや教育を受ける必要があるのか、賞金（給料）はどれくらいなのかなど、とても詳しく書かれています。日本で同じ仕事に就くとしても役に立つ情報が多いと思いますのでぜひ参考にしてみてください。
ちなみに、もう一つあるJob Zoneというドロップダウンメニューは、その仕事に就くために必要な職業トレーニングや教育レベル（高卒、大卒、大学院卒など）を示したもので、これによっても検索結果を絞り込むことができます。

数値が大きくなるほど必要なトレーニングや教育レベルが高まります。

1. の職業は準備はいらない、または少しだけ（高卒、もしくは高卒資格、何らかの免許が必要な場合もあり。）
2. の職業はいずれかの準備が必要（高卒でかつ何らかの職業訓練、大卒が条件の場合もあり。）
3. の職業は中程度の準備が必要（短大や専門学校卒。大卒が条件の場合もあり）
4. の職業はかなりの準備が必要（ほぼ大卒以上）
5. の職業はかなり専門的な準備が必要（ほぼ大学院卒以上）
Appendix I

Homework Assignment (Occupational Information Search)

English and Japanese
**Occupational Information You Searched**

* Filling out this document is an important part of this research project. Please make sure to fill all the blanks.

Please tell me the information about occupations you searched for on Career Matrix or O*Net. Write down the occupations of your interest from 1 to 3. If you did not find anything interesting, or you cannot prioritize, just write down the occupations you looked at. Make sure to write three occupations.

<table>
<thead>
<tr>
<th>Occupation 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation:</td>
</tr>
<tr>
<td>Wages(if provided):</td>
</tr>
<tr>
<td>Required education, training, and qualification (or knowledge needed for the occupation):</td>
</tr>
<tr>
<td>What kind of personality or interest suits this job:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Occupation 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation:</td>
</tr>
<tr>
<td>Wages(if provided):</td>
</tr>
<tr>
<td>Required education, training, and qualification (or knowledge needed for the occupation):</td>
</tr>
<tr>
<td>What kind of personality or interest suits this job:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Occupation 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation:</td>
</tr>
<tr>
<td>Wages(if provided):</td>
</tr>
<tr>
<td>Required education, training, and qualification (or knowledge needed for the occupation):</td>
</tr>
<tr>
<td>What kind of personality or interest suits this job:</td>
</tr>
</tbody>
</table>

How many occupations did you search information for including the above three?

How much time did you spend searching information on the website? About ____ hours ____ min

Please return this document to the investigator with an attached envelop.
情報をしらべた職業記入用紙

※ この用紙への記入は当研究の大切な一部分ですので、記入もれ等ないようお願いします。

職業情報ウェブサイト Career Matrix や O*Net であなたが調べた職業について簡単に教えてください。できれば自分が1番興味を持った職業から3番目に興味を持った職業までについて記入して下さい。もし興味をひかれた職業がなかった場合や、順番をつけられないといった場合は自分が調べた職業なら何でもかまいませんが、必ず3つの職業の記入をお願い致します。

調べた職業その1

<table>
<thead>
<tr>
<th>職業名：</th>
<th>賃金・給料（もしあれば）：</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

必要なトレーニング・教育・資格など（もしくはその職業に必要な知識）：

どんな性格・興味を持った人に向いているか：

調べた職業その2

<table>
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<th>職業名：</th>
<th>賃金・給料（もしあれば）：</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
</tbody>
</table>

必要なトレーニング・教育・資格など（もしくはその職業に必要な知識）：

どんな性格・興味を持った人に向いているか：

調べた職業その3

<table>
<thead>
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<th>職業名：</th>
<th>賃金・給料（もしあれば）：</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
</tbody>
</table>

必要なトレーニング・教育・資格など（もしくはその職業に必要な知識）：

どんな性格・興味を持った人に向いているか：

上の3つの職業を入れて、合計いくつの職業情報を調べましたか：

インターネットで職業情報を探すのにかかった時間はおよそどれくらいですか： 約____時間____分

この用紙は同封の封筒に入れ研究者に郵送してください。
Appendix J

Step 4 Instruction

English and Japanese
Thank you very much for sending your step 3 documents. This is the last step.

**Step 4** Instruction

Please read the following instructions and fill out the documents.

1. Please fill out “Demographic Questionnaire”. You may notice that there are some items you have already provided, but please write down your current thoughts.

2. Please fill out the document titled “My Vocational Situation.” You may notice that there are some items you have already provided, but please write down your current thoughts.

Once you have finished writing, please send the “Demographic Questionnaire” and “My Vocational Situation” to Mr. Ohashi using the envelope provided (no stamps needed). You may fold the documents.

Thank you very much for your cooperation for this study.

For further information regarding this research project and how to fill out the documents, please feel free to contact Mr. Ohashi.

E-mail: taki0084@gmail.com

Tel: 937-367-7232 Eastern time zone (same as New York)
ステップ3の書類郵送ありがとうございました。今回は最後のステップです。

ステップ4 やり方の説明

次に書いてある説明にそって質問紙への記入をお願いします。

1. 「Demographic Questionnaire」と書かれてある用紙の記入をお願いします。以前と同じ質問もありますが、今の自分に当てはまる回答を記入してください。

2. 「わたしの職業情報」と書かれてある用紙の記入をお願いします。以前と同じ質問項目ですが今の自分に当てはまる回答を記入してください。

記入が終わりましたら、「Demographic Questionnaire」と「わたしの職業情報」の2枚の用紙を同封されている封筒に入れて大橋まで郵便にて送り返してください。折り曲げてもかまいません（切手は不要です。）

調査へのご協力ありがとうございました。

この調査研究、用紙記入に関するご質問等はお気軽にお問い合わせください。
E-mail: taki0084@gmail.com
電話: 937-367-7232 Eastern time zone（ニューヨークと同じ）
Appendix K

Posttest Demographic Questionnaire

English and Japanese
Demographic Questionnaire

Please answer following the questions A to F

A. Today's date:  month  date

B. Circle your career or educational plan/s after graduating high school. (Circle all that apply.)
   ( Work / Vocational school / 2-year college / 4 year college / others )

C. Circle the country where you wish to do your job hunting. (Circle all that apply.)
   ( Japan / the U.S. / others )

D. To obtain a job that you wish to do in the future, which of the following approaches would you like to take? Please indicate the number either (1) or (2).

   (1). First I would like to decide on a company or organization I would wish to work for. Then I will work on various jobs assigned to me and develop my career within the company or organization. That is to say, deciding on the desired workplace is more important than specifying the desired occupation.

   (2). First I would like to decide on an occupation that I like. Then I will look for a workplace where I can do this particular job and develop my career based on this occupation. That is to say, deciding on the desired occupation is more important than the organization where I will do this job.

E. About your career, please indicate which of the following statements, (1) or (2), closely represents your current thoughts.

   (1). First I would like to choose an industry (e.g.: manufacturer, trading firm, financial industry, mass media, and government, etc) where I want to work. Then, I would like to engage in various occupations in the industry.

   (2). Regardless of the types of industries (e.g.: manufacturer, trading firm, financial industry, mass media, and government, etc), I would like to engage in the occupation which utilizes the skills and abilities I possess (or I am going to acquire).

F. About your career, please indicate which of the following statements, (1) or (2), closely represents your current thoughts.

   (1). I would like to work in a popular and well-known company or organization, even though sometimes I may be assigned to the department which I do not want to work in.

   (2). If I can do the kind of jobs that I want to do, I don’t care much about the name recognition of the company or organization.
6. Since you decided to participate in this research project, how much time did you spend searching for information about your future occupational by using sources such as the internet? (Circle only one of the following options.)
   (less than 1 hour / less than 3 h / less than 5 h / less than 7 h / less than 10 h / more than 10 h)

H. How much time did spend you using "D*Net" for your occupational information search? (Circle only one of the following options.)
   (not at all / less than 1 hour / less than 3 h / less than 5 h / less than 7 h / less than 10 h / more than 10 h)

I. Considering the Japanese economy, how concerned are you about your future? Select only one answer from the following (1) to (5) statements.
   (1). I am not concerned at all.
   (2). I am not concerned.
   (3). Neutral.
   (4). I am concerned.
   (5). I am very concerned.
Demographic Questionnaire

次のA～Iの質問にお答えください。

A. 今日の日付： 月 日

B. 今現在の高校卒業後の進路希望を丸で囲んでください。（2つ以上でもかまいません）

( 就職 / 専門学校 / 短大 / 4年生大学 / その他 )

C. 将来、就職活動を行う予定の国を丸で囲んでください。（2つ以上でもかまいません）

( 日本 / アメリカ / その他 )

D. 自分がやりたい仕事に就くために次の二つのうちどちらのアプローチをとりますか？今現在の自分の考えにより近いほうを（1）か（2）のどちらか一つだけ選んで丸で囲んでください。

(1). まず自分が働きたいと思う会社や組織を決め、職種にとらわれず様々な仕事をしてキャリアを積んでいく。
つまり、自分の働きたい職種（企業・政府・団体など）を決めるのは、特定の職業内容を決めるよりも大切である。

(2). まず自分がつきたい職業・仕事内容・職種を決め、そしてそれができる職種を探しキャリアを積んでいく。
つまり、希望する職業内容のほうが、職種（企業・政府・団体）えらびよりも大切である。

E. 仕事について、今現在の自分の考えにより近いほうを（1）か（2）のどちらか一つだけ選んで丸で囲んでください。

(1). 働きたい業種（メーカー、商社、金融、マスコミ、官公庁など）を選び、その業界で自分にできることなら色々な仕事をしてみたい。

(2). 業種（メーカー、商社、金融、マスコミ、官公庁など）にはこだわらず、自分が持っている（これから身につけられる）能力や知識を主に使っているような仕事をしていきたい。

F. 仕事について、今現在の自分の考えにより近いほうを（1）か（2）のどちらか一つだけ選んで丸で囲んでください。

(1). 時には希望通りの部署に配属されるかもしれないが、人気の高い有名な企業や組織で働きたい。

(2). 自分に合った仕事、やりたい仕事ができるなら企業や組織の知名度はあまり関係ない。
G. この研究への参加を希望した日から今日まで、インターネットなどを使っておよそどのくらいの時間が、将来のための職業情報収集に使いましたか？（当てはまるものをひとつ選びで囲んでください）

（1時間以内 / 3時間以内 / 5時間以内 / 7時間以内 / 10時間未満 / 10時間以上）

H. 職業情報を探すためにご紹介した英語のサイト「O*Net」はどの程度利用しましたか。（当てはまるものをひとつ選びで囲んでください）

（まったく利用しなかった / 1時間以内 / 3時間以内 / 5時間以内 / 7時間以内 / 10時間未満 / 10時間以上）

I. 日本の経済状態などをふまえ、自分の将来の道路についてどの程度心配していますか。（1）〜（5）のうち当てはまるものをひとつだけ選んで丸で囲んでください。

(1). まったく心配していない
(2). あまり心配していない
(3). どちらともいえない
(4). やや心配である
(5). とても心配である
Appendix L

Pretest MVS Histograms
T = treatment condition
M = male
F = female
W = workplace/company model
O = occupational model
C = control condition
M = male
F = female
W = workplace/company model
O = occupational model
Appendix M

Posttest MVS Histograms
T = treatment condition
M = male
F = female
W = workplace/company model
O = occupational model
C = control condition

M = male

F = female

W = workplace/company model

O = occupational model
Appendix N

Residual Plot
Residual Plot

Dependent variable = Posttest My Vocational Situation

Covariate = Pretest My Vocational Situation
Appendix O

Correlation Matrix

(Treatment Group: MVS Gain Score and RIASEC Interest Types)
## Treatment Group: MVS Gain Score and RIASEC Interest Types

\[ N = 31 \]

<table>
<thead>
<tr>
<th>MVS Gain</th>
<th>R</th>
<th>I</th>
<th>A</th>
<th>S</th>
<th>E</th>
<th>C</th>
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</thead>
<tbody>
<tr>
<td>r</td>
<td>.016</td>
<td>.451*</td>
<td>.183</td>
<td>.166</td>
<td>- .048</td>
<td>.268</td>
</tr>
<tr>
<td>p</td>
<td>.933</td>
<td>.011</td>
<td>.324</td>
<td>.371</td>
<td>.798</td>
<td>.145</td>
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</table>

<table>
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<tr>
<th>Realistic (R)</th>
<th>r</th>
<th>p</th>
<th>I</th>
<th>A</th>
<th>S</th>
<th>E</th>
<th>C</th>
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<tbody>
<tr>
<td>r</td>
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<td>-.258</td>
<td>.099</td>
<td>-.029</td>
<td>.136</td>
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<td>p</td>
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<th>Investigative (I)</th>
<th>r</th>
<th>I</th>
<th>A</th>
<th>S</th>
<th>E</th>
<th>C</th>
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<td>.108</td>
<td>.096</td>
<td>.101</td>
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<td>p</td>
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<table>
<thead>
<tr>
<th>Artistic (A)</th>
<th>r</th>
<th>I</th>
<th>A</th>
<th>S</th>
<th>E</th>
<th>C</th>
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<tbody>
<tr>
<td>r</td>
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<td>.060</td>
<td>.502**</td>
<td>-.023</td>
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</tr>
<tr>
<td>p</td>
<td>.502**</td>
<td>.004</td>
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<td>.004</td>
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</table>

<table>
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<tr>
<th>Social (S)</th>
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<th>I</th>
<th>A</th>
<th>S</th>
<th>E</th>
<th>C</th>
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<tbody>
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<td>r</td>
<td>.458**</td>
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<td>.458**</td>
<td>.009</td>
<td>.079</td>
<td></td>
</tr>
<tr>
<td>p</td>
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<th>S</th>
<th>E</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>r</td>
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<td>.173</td>
<td>.251</td>
<td>.173</td>
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<tbody>
<tr>
<td>r</td>
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<tr>
<td>p</td>
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<td>___</td>
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* Pearson Correlation is significant at the 0.05 level (2-tailed).

** Pearson Correlation is significant at the 0.01 level (2-tailed).